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Poptávka po řešení mobilního zabezpečení v případě ztráty mobilního telefonu mezi dospělými z Generace Y

Demand for Mobile Security Solution in Case of Loss of Mobile Phone among Adult Millennials

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Description:

1. Introduction
2. Literature review and research methodology
3. Characteristics and functionality of the suggested product
4. Analysis of collected data
5. Research findings and recommendation
6. Conclusion

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Declaration of Independent Elaboration of a Bachelor Thesis

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1 Introduction

In recent years technological development has yield plenty of innovations into the mobile phone industry. Especially, smartphones are now full of functionalities and many people could not imagine life without these universal companions anymore. However, new functionalities or improvements are reflected in higher prices of smartphones and thereby smartphones become more and more valuable for their owners.

On the other hand, there is another aspect, which increases the value of the smartphone even more. Smartphones enables to store personal data such as passwords, credit card details, photos, and other personal information. These all could be lost alongside with physical loss of the smartphone or through an internet connection by hacker. In order to prevent these situations, it is necessary to protect the smartphone from both sides, online and offline. Software installation can serve as an internet attacks protection; smartphone might be equipped by various types of software, such as firewalls or anti-viruses. These perfectly work every time the user goes online. However, when it comes to situation of physical loss, existing security products does not seem to be always successful and cannot prevent smartphone sufficiently.

With existing devices being not suitable to protect smartphones against physical loss, new device which could provide such protection should be developed. Thus, this research's motivation is to examine whether there is demand for such security solution, and if so, the research will attempt to create a design and determine basic features of the device. Smartphone losses happen very frequently; research in the United Kingdom has shown, that the most often lost item among adults was mobile phone or smartphone ("We're a bunch of 'losers'", 2012). Therefore, in order to prevent such situations and consequently decrease the number of losses, it seems very important to implement some kind of security solution which would be able to locate lost smartphone.

This study will analyse the consumer attitude toward implementation of such security solution into their smartphones and will attempt to investigate whether people express interest in such device usage, if any. Moreover, the research will conduct analysis of existing competition in the field of 'anti-loss' security products, which could show some product vulnerabilities and therefore reveal potential niche on the market for a new, more suitable and effective product.

Research is going to be conducted among Millennials (category of people roughly 18 – 35 years old). The exact range of age category in which Millennials fit is indistinct as various researchers characterize them differently in terms of age. Focus on Millennials was derived by several factors. They are active and careless, which seems to create an opportunity to lose the phone and to prompt higher number of potential losses. Millennials display higher level of interest when it comes to purchase of applications for smartphone than any other generation and thereby they are likely to be willing to consider a purchase of such security solution ("Generation Y leads the way on smartphones", 2013). Furthermore, they tend to interact with their phones on a daily basis and are more open to new functionalities so they do not hesitate to use their smartphones for online banking or as a storage for personal data (Jain & Pant, 2012). Thanks to these characteristics, Millennials seem to be the most suitable age group for the focus of this research.

The main aim of this study is to determine, if Millennials keen on raising the chance to find their smartphone in case of its loss by displaying some interest in purchase a new security solution for their device. To answer the main aim of this study, three objectives were stated:

- To find out, if Millennials are interested in new security solution, which could help to find the smartphone in case of its loss.
- To examine existing competition on the mobile security market and analyse existing products providing 'anti-loss' mobile security.
- Based on the analysis of existing products determine what characteristics new proposed security solution has to fulfil in order to improve the functionality of existing products.

2 Literature review and research methodology

2.1 Consumer behaviour

Solomon (2013, p.31) defines consumer behaviour as "the study of the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy needs and desires". Additionally, Blackwell, Miniard and Engel (2001, p.6) try to simplify the definition and claim that consumer behaviour is the study of 'why people buy'.

Individuals are in their decision making shaped by external factors. Kotler and Keller (2012) introduce cultural, social and personal factors as the main three categories which could influence consumer behaviour. Nevertheless, cultural factors are excluded, because they are irrelevant for the focus of this research.

2.1.1 Social factors

Kotler and Keller (2012) state three main social factors, which might influence consumer behaviour; reference groups, family, roles and status. The author describes reference groups and family in more detail, however roles and status will be omitted, as they are not subject of this research.

Reference groups

According to Blackwell, Miniard and Engel (2001) reference groups consist of one or more individuals, who have significant influence on consumer behaviour. They introduce different types of groups and add that one person could be part of more than one group at the same time.

- Virtual groups

According to Blackwell, Miniard and Engel (2001), virtual groups use the Internet Network, where in forms of chatrooms or other social media channels could meet their real or virtual friends from the rest of the world without face-to-face contact. Thus, they could be influenced in their decisions basically by everyone (Fallon, 2014). According to "Social and media networks - UK - May 2014. Appendix – The consumer – Social and

media networks used" (2014) Generation Y is mostly active on Facebook, followed by YouTube and Twitter.

High level of influence of virtual groups is also caused by accessibility of an internet connection during the day among people. In the first quarter of the year 2014, 84% of British citizens had internet access, when 57% of them had an access via their mobile phones (Ofcom, 2014). This constant availability of an internet connection everywhere may lead to dependence on devices providing such connection. Giving an example, research conducted by BT's Group Brand Team (2001, cited by Solomon et al., 2013) revealed that people could not imagine life without mobile phones anymore.

Gen Y spends more than 19 hours per week on the Internet for recreational purposes, where social media channels constitutes the biggest part of this time. Therefore people can be highly influenced by acquaintances on these channels (McCarthy, 2014 and Laconi, Tricard, & Chabrol, 2015). According to Ofcom (2014), young adults spend more than three and half hour by interacting with their smartphones each day. In average, Facebook and Twitter take 37 minutes every day from every American's life.

Nevertheless, geographical aspects of the individual has to be taken into consideration as people with different nationalities could display different level of how they are influenced in their purchase decisions by social media channels and interactions on them. Goodrich and Mooij (2014) claim that consumers from the United Kingdom would be less likely influenced in their decisions by social media channels than people from the Czech Republic.

- Family

Kotler and Keller (2012) claim that family has major influence on individuals and creates primary reference group. They introduce two categories of family factors; family of orientation including siblings and parents, and family of procreation including children and spouse of the person. Religion, politics, personal ambitions and love, these are aspects which the person is likely to inherit from parents.

Family roles has changed when comes to purchase of technology. Older Generation X, i.e. parents, does not hesitate to address decisions about purchase of software, television or other technology to Millennials, i.e. their children. Millennials was brought

up with technologies nearby. They are called as tech-savvy generation and display higher experience in interaction with modern technologies than their parents from Generation X (Mumford, 2006). Nevertheless, Beneke, Silverstone, Woods, & Schneider (2011) state that with increasing price the influence of children, i.e. Gen Y, decreases.

2.1.2 Motivation

Kotler and Keller (2012) distinguish between biogenic needs which include hunger, thirst or discomfort, and psychogenic needs such as recognition, esteem, or belonging. They claim that when the need reaches the level to make the person start acting, this need becomes a motive. Furthermore, they introduce three theories of motivation – Freud's theory, Maslow's theory and Herzberg's theory. However, as Freud's theory does not correspond with topic of this research, it will be omitted.

Maslow's theory

Maslow (1954, cited by Kotler and Keller, 2012) introduces hierarchy of individual's needs. This hierarchy consists of five levels of different types of needs sorted from the most to least pressing – physiological needs, safety needs, social needs, esteem needs, and self-actualization needs. Nevertheless, only safety needs will be outlined, because of their direct connection with research topic. The remaining stages of Maslow pyramid will be excluded as does not link to the research.

Perception of safety is a second need from Maslow's hierarchy hence it is obvious that this need will be preferred right after physiological needs. Giving and example, for someone home could serve as a satisfaction factor to satisfy his safety-security needs. Nevertheless, new technology and its threats could highly influence the perception of personal safety.

Technological improvement in the field of mobile phones gave a rise up to the new type of mobile phone, called smartphone. This new generation of mobile phones extended usability of classical mobile phones for a wide spectrum of new functionalities. One of these new features is ability to connect our mobile phone into the Internet network and use it for browsing, watching videos or listening music from online sources. Moreover, smartphone enables to install variety of applications in the device and store large amount of data, which make the smartphone indispensable companion for many people

(TechTerms, 2010 and PC Magazine Encyclopedia, 2015). However, it was proved, that frequent interaction with the smartphone could create strong dependence in some cases, which could lead to fear from losing the smartphone i.e. “nomophobia” (King et al., 2014). Moreover, functionalities and price of modern smartphones are very attractive temptations for thieves or for those, who accidentally find the phone, but have problem to find out who is the owner hence it easier for them to keep this for themselves. As a result, neither home safety could fully satisfy safety needs of the individual, while there are worries about phone security.

Furnell (2009) in his book recommends to be aware of potential risks which each of smartphones is carrying with itself. For example, he mentions survey from Equifax agency, which asked their customers about storing personal data in their phones and found out that 16% from 608 attendants stored their pins in their mobile phones and 24% attendants had dates of birthdays in their phones as well. As a result, the storage of such important data on mobile devices could create concerns about their safety and hence evoke fears of losing it alongside with the loss of the smartphone. In regards to mobile safety, the survey of 1 922 British consumers revealed, that 65 % of respondents prefer to have their smartphones better secured rather than purchased new models (survey of F5, 2014, cited by Williams, 2014). Moreover, in order to have smartphone better protected, people are willing to pay for it hence it could be an advantage for those security solutions, which respect it (Savage & Waldman, 2013).

However, despite of concerns about loss of the smartphone and increase in awareness of necessity to obtain some mobile security solution, the majority of customers still do not have one (Mirzoev, Brannon, Lasker, & Miller, 2014). On contrary, the vast majority of smartphone owners reaches their phones 150 times per day from the time when they wake up to time when they fall asleep and therefore take the risk to accidentally left their phone somewhere (Meeker, 2013).

Herzberg’s theory

Herzberg (1966, cited by Kotler and Keller, 2012) claims that motivation is influenced by two factors, dissatisfiers and satisfiers, where absence of factors causing dissatisfaction is not enough to motivate consumer to act. It terms of mobile security, consumers could not be motivated enough to purchase some security product e.g.

satisfier, until they lose their smartphone, which make them dissatisfied and force them to act in order to prevent such situation once again.

2.2 Market segmentation

Analysis of consumers and their behaviour can help to divide these consumers into several groups according to similarities they share. This process of categorization is called market segmentation and its main aim is to tailor products or services of the company to specific needs of these groups. Blackwell, Miniard and Engel (2001, p.39) define market segment as "a group of consumers with similar needs and behaviour that differ from those of the entire mass market".

According to Blackwell et al., (2001), the market segment could be defined from three different characteristics; demographic, psychographic and situational. This paper defined the segment according to demographic characteristics, which seemed to be the most suitable for the focus of this research. Situational and psychographic characteristics were excluded, because they are hard to control and are not relevant for this research.

2.2.1 Demographic segmentation

Segment is shaped by application of several demographic criteria, however this research identifies only those, which are relevant and correspond with research question. Following criteria are taken into account; (1) Age, which was used as the main aspect for this research. People in the same age category can express same needs as well as they can have similar expectations or opinions. (2) Gender, as males and females may act differently in the same situation or they may differ in attitudes towards security (Solomon, 2013). Giving an example of such differentiation between genders, British insurance company (2012, cited by Reddy, 2014), and Harris Poll (2014, cited by Perkins, 2014) stated that males tend to lose items more than females. Gov.uk (2014), supports this and add that the most vulnerable to lose phone are females in age from 14 to 24 followed by females aged from 25 to 34. Furthermore, there are some evident differences in terms of purchase of technological products. Males tend to conduct research in pre-purchase phase, but females in contrast prefer friends and family for recommendations ("Researching and buying technology products - UK - July 2014. The consumer – What influences consumer technology purchases", 2014 and "Researching and buying

technology products - UK - July 2014. The Consumer – Researching technology products", 2014).

Also aspects such as (3) education, (4) income or (5) labour market status play important role in purchase decisions or in the extent of interest in security products hence these variables were also taken into account for this research (Blackwell et al., 2001). Last but not least, (6) geographical factors including country may also have an effect on the level of interest of individual in security products as well as on willingness to pay for them ("Digital news report 2014: Paying for digital news", 2014).

Generation Y

Demographic group called Generation Y or Millennials include all individuals who were born between approximately 1980 and 2000 (Weingarten, 2009 and Sayers, 2007).

Millennials rise in size cover 24% of U.S. population with total spending predicted to be $200 billion annually in 2017 (Nelson, 2012 and "Millennials: Breaking the myths", 2014). In Europe became Millennials also significant category with annual spending around 61 billion euros (Solomon et al., 2013). Fromm (2013) characterizes Millennials as educated, relaxed and active consumers who want to participate with their favourite brands, heavily influenced by their friends who they have plenty of, both online and offline. iPerceptions (2006, cited by Mangold and Smith, 2012) describe Generation Y as a very skilful within the online environment with sense for seeking purchase-related information, easy switching between brands, looking for quality and for reasonable price. Bounie, Bourreau, Gensollen, & Waelbroeck (2008, cited by Mangold and Smith, 2012) claim that Generation Y has access digital media on daily basis. McCartney (1994, cited by Solomon et al., 2013) describes Millennials as independent on family, but with strong relation to the Internet as a preferable type of communication.

According to Miller and Washington (2012) Generation Y spend more than half of the day interacting with modern technologies. Furthermore, Adage.com (2003, cited by Lester, Forman and Loyd, 2005) stated that average use of the Internet is around 16.7 hours per week among people in age from 13 to 24. Alongside with these statements Bush, Martin, and Bush (2004, cited by Xu, 2007) add that individuals from this category have potential to become lifelong customers, open-minded and well informed towards new products.

In terms of smartphone ownership, Generation Y is according to "Digital trends autumn - UK - September 2014. Appendix – Consumer technology products" (2014) a leader across generations. Figure 2.1 shows that Millennials dominates in terms of smartphone ownership. Based on these two researches it could be seen that Generation Y seems to be the most attractive group for the mobile security market. Additionally, Gardyn (2002) claims that total spending of student in the United States could reach around $3,444 per year. In Hong Kong spending are in range from $3300 to $4500 per person per year (Hedrick-Wong, 2008).

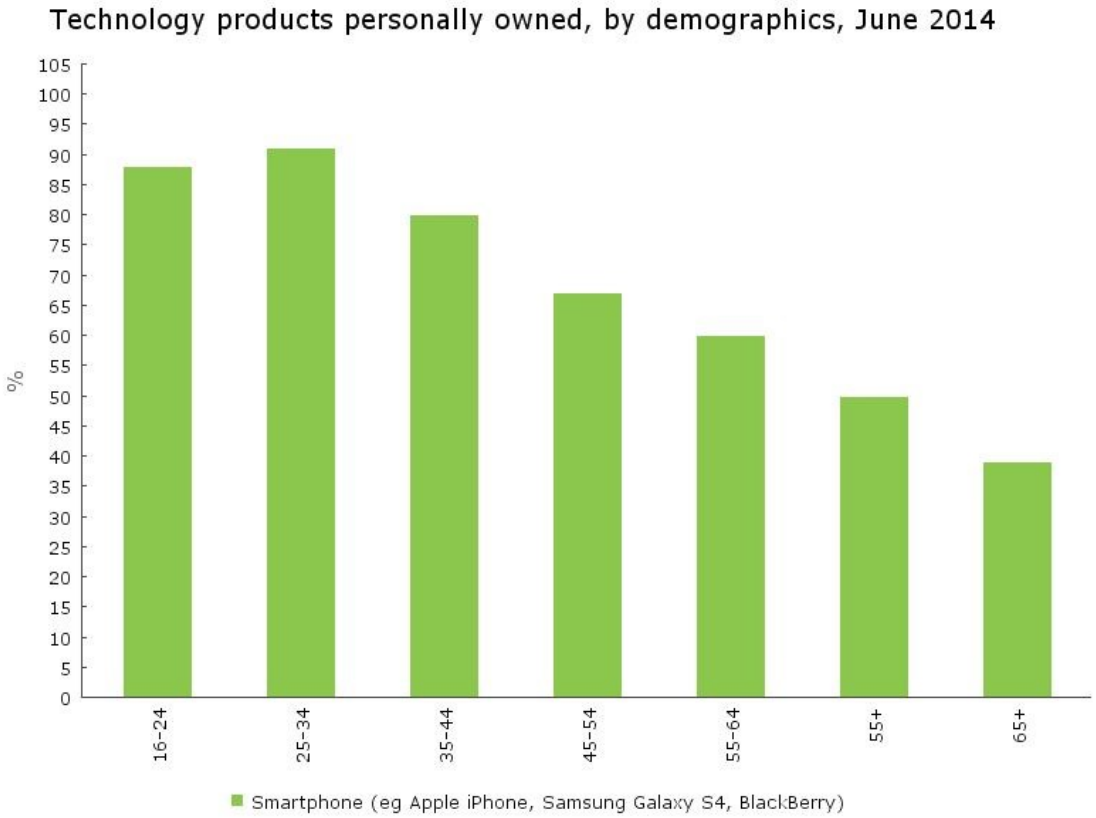

Figure 2.1 Smartphone ownership among generations ("Digital trends autumn - UK - September 2014. Appendix – Consumer technology products", 2014)

In terms of demand for security, "Digital identity, security & online fraud: Almost half of young people believe mobile security is a priority" (2014) says that almost half of respondents prioritize security and do not mind to take few more steps in completing some of their online purchase processes which increase the security. At this point, the author speculate that Generation Y is very likely to be interested in some security

solutions as was revealed that one of the most important concerns among Millennials is online privacy and security ("News app targets Millennials - 31st October 2014", 2014).

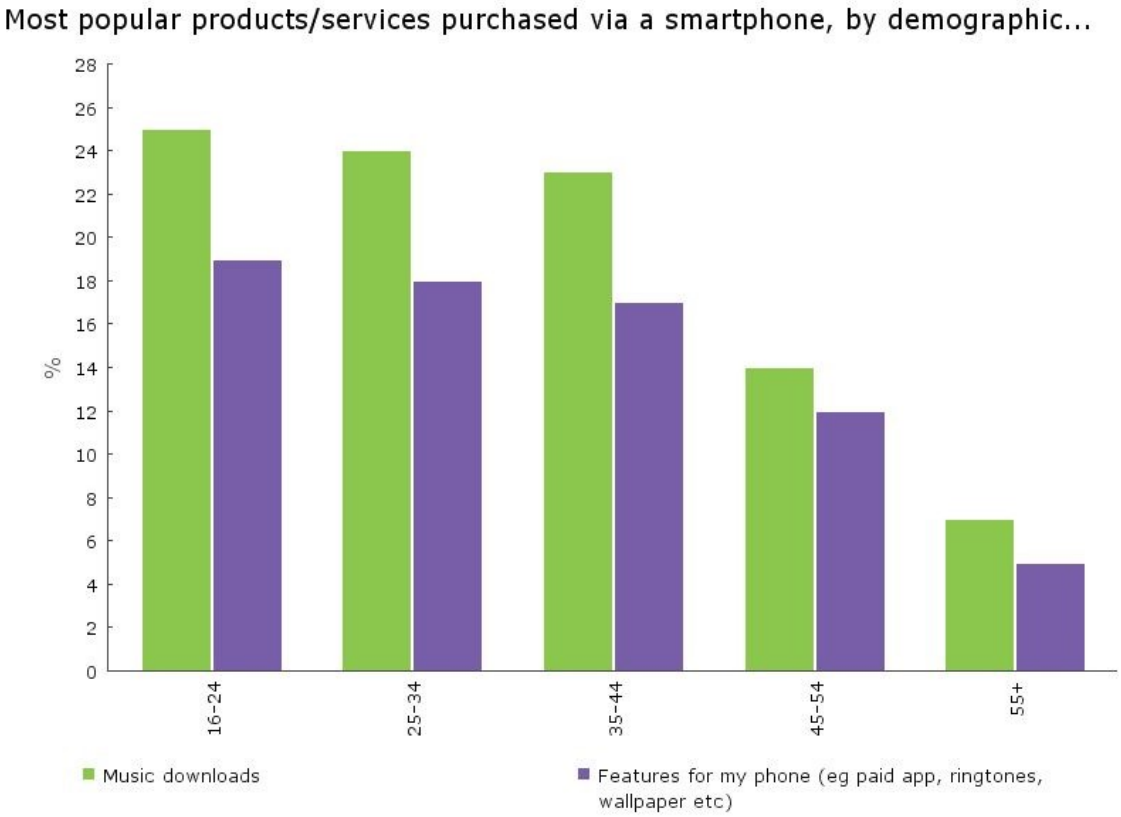

Figure 2.2 The most popular products/services purchased via a smartphone, by demographics ("Smartphone purchasing habits - UK - November 2012. Appendix – Products and services purchased", 2012)

In purchases done via smartphone Generation Y is according to "Smartphone purchasing habits - UK - November 2012. Appendix – Products and services purchased" (2012) the most active. Figure 2.2 shows, that Millennials dominates in music downloads as well as in obtaining features for their mobile phones. Giere (2007) agrees and adds that Millennials are willing to pay for technology and services, but expect sellers to create products which match their needs, not the other way round.

2.3 Mobile security market

According to "Gartner says sales of smartphones grew 20 percent in third quarter of 2014" (2014), nine out of ten phones will be smartphones within three years. Although there is evident constant growth in terms of popularity of smartphones, also concerns

about their safety become more significant and therefore importance of security solutions comes to mind (Moth, 2014).

As focus of this research is concentrated on physical loss of smartphone, security solutions, which prevents users against internet attacks were excluded from the research as these are not relevant. Nevertheless, some companies offer packages including internet protection together with tracking software. In this case, only tracking software will be taken into account.

2.3.1 Alternative solutions in case of physical loss of the smartphone

Security market offers some alternatives in case of physical loss of the mobile device. Firstly, there is passive or active effort from the owner to find his phone. Secondly, there are alternatives, which try to quantify physical loss and provide financial compensation or offer replacement for lost phone in form of new phone. However, these alternatives do not find the original phone in case of its loss, therefore new replacement or financial compensation would not save data stored in original phone.

Passive way how to find the lost smartphone

Those people, who have lost their phone can adopt passive stance towards finding their phone. In such situation, the owner does not make any effort to find his phone and supposes that somebody would find his phone and return it to him.

Active way how to find the lost smartphone

Another possibility is that owners of smartphone could try to find their lost phone by themselves. In this situation, they could use several options including activity on social media channels, contacting local police, operator or acquaintances and also search for places where the phone could have been left.

For the purpose of listing lost items online were identified several popular platforms among people, however the author took only two platforms, which considers as the most important. Firstly, there are two online registers called Immobilise and Report My Loss which are the largest free registers of possession ownership details. Everyone, who has lost something should report this loss on one (or both) of these sites, which are checked

by police (Immobilise, 2015 and ReportMyLoss, 2015). Secondly, social platforms such as Facebook or Twitter offer their users to create or join groups where they can advertise losses of their smartphones and other items.

Insurance providing replacement of the smartphone

It was discovered that the majority of insurance companies offers replacement for lost mobile phone. Most of them called such replacement 'new for old' action. Moreover, some banks offer mobile insurance alongside with bank account or as an optional item to bank account, but sometimes they charge extra fee for such service.

Nevertheless, the analysis of mobile insurance market discovered some other issues to be considered. In terms and conditions of companies, situations in which the insurant could make a claim in case of phone loss are specified. As a result, the insurant could find out that the mobile insurance cannot be applied on situations such as (1) when the phone has been left on the public place, in a taxi or in other mean of transport, or (2) if the phone has been lost together with other personal belongings. Additionally, the insurant must take into consideration insurance fees and also has to pay excess for every claim he makes with restriction that he is allowed to make a claim only few times within one year (maximum three times per year was found). Last but not least, if the phone was found after insurant had already made a claim, then it would become a property of the insurance company. Finally, the mobile insurance is not allowed to be established only for the loss, but it is a part of the complex package (Barclays, 2015, Bater, 2015, Butler, 2015, EE, 2015, Insurance2go, 2015, InsureMyPocket, 2015, Lloyds Bank, 2015, O2, 2015, TESCO Bank, 2015, Virgin Media, 2015, Vodafone, 2015, HSBC, 2014, "Do I need mobile phone insurance?", 2014, Mckay, 2014, Torney, 2013).

Insurance providing financial compensation

Analysis revealed, that only few companies offer financial compensation. Nevertheless, financial compensation is offered only as a second option after declining the replacement by customer or in case of the company is not able to find adequate replacement. For financial compensation are applied same terms and conditions as for replacement, but the final price is calculated according to estimated value of the lost phone, however data stored in the lost smartphone are excluded from price calculations.

Additionally, all issues mentioned above has to be taken into account as well (Bater, 2015, Nationwide, 2014).

2.3.2 Anti-theft

With rising number of smartphones also the size of information stored in them rises. Hence the importance of security becomes more needed than ever before. Anti-theft security covers wide range of designs created for the purpose of (1) prevention against theft of the device, (2) help to get the device back to owner's hands or at least (3) to cause difficulties when stealing the device. Whitehead et al. (2007) divide anti-theft designs into several categories creating acronym called 'IN SAFE HANDS': identifiable, neutral, seen, attached, findable, executable, hidden, automatic, necessary, detectable, and secure. Short description what each category covers is explained in Appendix A.

Whitehead et al. (2007) also claim that the more of these anti-theft solutions are presented in/on the device, the safer the device is. Each of these designs introduce different types of protection, however for the purpose of this research only findable solutions will be outlined, because they are directly connected with the process of finding the device.

According to Whitehead et al. (2007) the category of findable anti-theft solutions consist of three types of methods; GPS tracking, GSM tracking and RFID based tracking.

2.3.3 Findable solutions

Smartphones allow to install wide range of applications which can be used for tracking of the mobile device. However, some manufacturers distribute smartphones with pre-installed tracking software, which is convenient for those customers who are not familiar with mobile security. Efforts to secure customers are also supported by global cooperation of several manufacturers united in GSM Association. For instance, such cooperation lead to foundation of CEIR, which works as a global register of stolen phones. Now, GSM operators who have access to this register could easily prevent the reuse of stole phones registered in this database ("GSMA outlines anti-theft initiative", 2004).

This research identifies several types of tracking solutions, which use different techniques for tracking mobile devices. First category uses combination of internet connection and GPS. Second category allows to find lost smartphone using internet connection only. Third category try to find location of the smartphone without GPS and internet connection using the cell tower technology (Legrady, 2015). The term cell tower technology will be explained in more detail later in this section.

Tracking solutions using GPS together with an internet connection

The most of applications for smartphones require both an internet connection and GPS to be turned on at the same time in order to work properly. Although these tracking applications are able to find the lost smartphone, several issues have been identified.

With regards to above stated requirements, owners have to bear in mind them and thus make an effort to obtain internet data from mobile network providers and also they have to keep GPS turned on. Nevertheless, these two applications were identified as battery expensive hence many researchers recommend to turned them off if they are not in use. Figure 2.3 shows smartphone battery usage, where is evident, that the most battery expensive are Wi-Fi connection followed by EDGE, 3G and GPS radio.

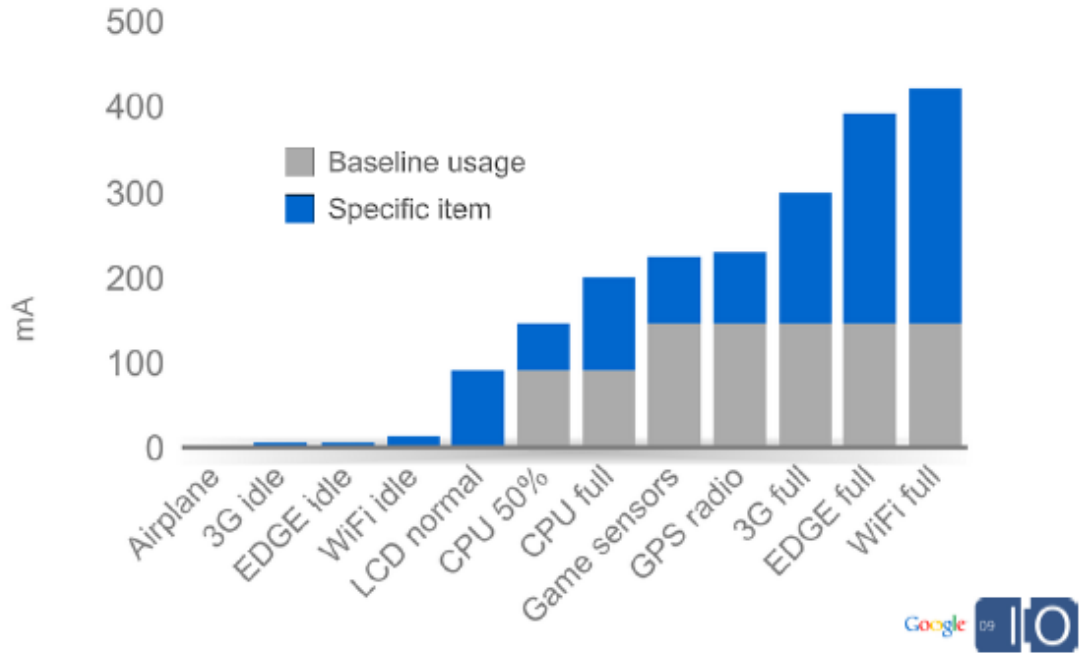

Figure 2.3 Smartphone battery usage (Root Uninstaller Team, 2012)

Despite of recommendations to disable GPS and an internet connection, consumers according to "Mobile Network Providers - UK - February 2015" (2015) utilize an opportunity to have and use the Internet in their smartphones. For instance, only 1% from all British applicants are without the mobile internet connection. On the other hand, it could be seen that people tend to turn off their internet data and GPS when they are not actively in touch with their smartphones. According to GMI (2014, cited by Arthur, 2014), 89% from 1 000 questioned UK residents stated, that battery life is one of the most important features when it comes to new smartphone purchase intention. Moreover, GMI (2014, cited by Arthur, 2014) adds, that half of the questioned respondents turn off Wi-Fi, Bluetooth or GPS location services when they are not needed. In this situation, tracking software could not properly work hence lost smartphone would not send its location. Moreover, smartphones could be secured by several tools such as a lock screen, which prevents strangers to unlock found phone. Impossibility to unlock mobile phone do not give any opportunity for finder to find out who is the original owner of smartphone.

Another issue connected with such solutions is obligation to link the smartphone with online account in order to see the location of the phone on other devices such as computer, tablet or other phone.

Tracking solutions using internet connection

Applications which use only internet connection are less battery expensive, but there are still similar disadvantages as were stated for previous solutions. Nevertheless, some companies offer combination of Wi-Fi based application and additional device, which cooperate together. When one leaves his smartphone in a certain distance from this additional device, then will be notified by this device to return back for his phone. However, an internet connection on smartphones is demanded to be turned on and what is more, additional devices use energy for they functioning, hence they need to be charged time by time. Another disadvantage is, that the external device has to be held close to the person for the whole time of its using. Last but not least, if the gadget is held together with the smartphone and both of them will lost, in this situation such solution is useless (BiKN, 2015 and ZOMM, 2012).

Tracking solutions using other possibilities how to track mobile devices

These types of solutions work on the principle of communication with cell towers or open Wi-Fi networks (Romsaiyud & Premchaisawasdi, 2009). The location of the phone is calculated based on the distance between cell towers and mobile phone.

This research identifies this solutions as the most reliable in terms of locating the lost phone, however there are some issues to be taken into account.

Firstly, the owner of smartphone needs to know Mobile Country Code (MCC), Mobile Network Code (MNC), Local Area Code (LAC), and Cell ID (CID) in order to be able to locate his phone. To obtain this information it is necessary to install certain application into smartphone and then save this information on a different place (computer, paper note, etc.). Secondly, accuracy of such solutions is different, because it depends on density of cell towers near place where the phone is located. This paper examined average radius approximately about 600 meters which correspond with the officially stated ¾ miles radius (Zaah, 2009 and Locke, 2012). Finally, some technological companies try to bypass the functionality of cell towers by different technologies. As a result, cell towers could be removed hence this solution might vanish in the future (Simonite, 2014).

2.3.4 Characteristics of Czech and UK mobile security market

The analysis of mobile security market revealed some possible ways how to find smartphone in case of its loss. Furthermore, this research discovered that all mentioned types of security solutions are offered in both countries, in the Czech Republic as well as in the United Kingdom.

Analysis of Czech and British mobile security market

- The ownership of smartphone

According to Ericsson Mobility Report (2014, cited by Kocman, 2014), only 31% of people in the Czech Republic own a smartphone, see Figure 2.4. On the other hand, the

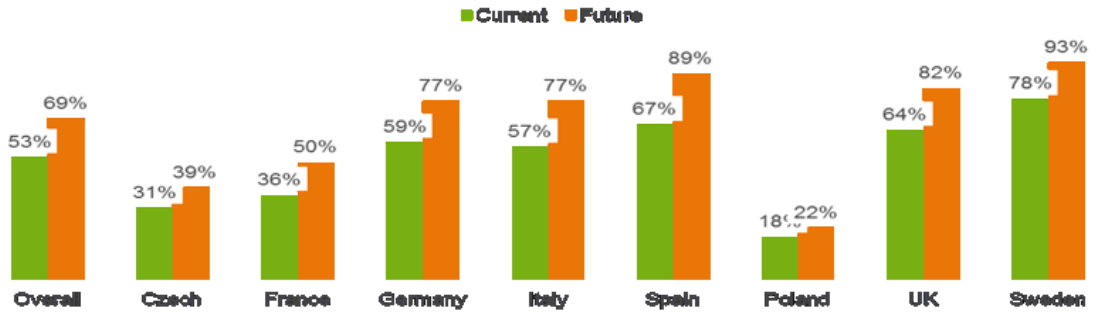

Figure 2.4 Smartphone ownership by country (Kocman, 2014)

number of smartphone owners is more than doubled in the UK. From this point of view, there are assumptions that the UK market is more attractive for mobile security solutions.

- Anti-theft software

Furthermore, in the study of Avast (2013, cited by Kalasova, 2013) it was discovered, that 71% respondents from the Czech Republic do not have anti-theft software installed in their smartphones. Such study was not found for the UK market, but in a global scope Avast (2014, cited by James, 2014) states that 34% smartphone users do not have anti-theft or antivirus installed.

- Tendency to lose personal belongings

IDG Research (2014, cited by "Phone theft in Europe: What really happens when your phone gets grabbed", 2015) revealed that one of the most common reasons why smartphones are stolen is that people forgot their phones on public places. In the UK, the most common lost item is according to "Lost something already today? Misplaced items cost us ten minutes a day" (2012) smartphone/mobile phone.

- Honesty to return found item to its owner

In terms of honesty of people in both countries, only poor evidence was found. Nevertheless, in the Czech Republic according to visitors survey on server Novinky.cz (Buřínská, 2013), 33.5% from 29 354 respondents would return lost item to its owner. Similar situation is in the UK where one quarter of those who had ever lost their personal belongings later found them (CPP research, 2010, cited by Jogia, 2010).

- Competitors in tracking solutions

Tracking products for smartphones are offered in the form of the software, which needs to be installed in the device. Therefore the only way how to purchase such product is to download it via the Internet and install it in the device. This research identified that App Store and Google play are the most popular servers and the most of tracking solutions are offered there (Gartner, 2012, cited by Watters, 2013). The existence of mobile applications is short, therefore the market is not fully saturated. Concurrently, mobile application market is very attractive which results in high number of new applications emerging nearly every day (Flurry, 2013, cited by Boswell, 2014). Thus, referring to Porter, Bamossy and Askegaard (1998), the barriers to entry appear to be low.

As the Internet enables companies from different countries to compete on one global mobile security market, so can consumers buy and use the same products regardless the country of origin. The only restriction seems to be the fact that some applications do not have support on some smartphones, especially due to different operation systems installed on them (Liu, Hu & Cai, 2014).

Analysis of the market suggests that the most popular tracking solutions are those, which are tightly connected with the brand of the smartphone or work on multiple platforms. Giving an example, Prey and Lookout are solutions which specialise mainly on the anti-theft security and could be installed on iOS as well as on Android devices (Prey, 2015 and Lookout, 2015). Then there is Find My iPhone application, which is working only on the iOS system hence it is popular among those people who own Apple products (Apple, 2012). Among users of Android based devices is very popular Cerberos anti-theft application (Google play, 2015). Finally, there are some representatives which offer anti-theft solution as a part of complex security package. For instance, McAfee or Avast offer complex security for smartphones in form of antivirus, firewall, data backup and anti-theft security (McAfee, 2015 and Avast, 2015).

In the following section of this chapter, the process of the research will be described. Initially, research approach and research strategy will be outlined. As next, chosen research method, data collection, population and sampling will be introduced. Furthermore, design of the questionnaire will be described together with pilot study. Finally, the author describes the limitations of the study.

2.4 Research approach

Maylor and Blackmon (2005) introduce two approaches to conduct the research. Ethnographic approach is based on observations, study of culture and asking questions why and how is something happening. To give answers on these questions it is essential to do interviews or direct observation. On the other hand scientific approach is asking questions what and how much, which could be answered by survey or experiment.

For the purpose of this study, scientific approach was chosen in order to better state the hypothesis and to answer the main aim of this research. As the theory already exists, scientific approach can test this theory and analyse collected data.

2.5 Research strategy

Research strategy is needed in order to achieve goals and to make a plan of processes how to reach this goals and to answer the research question. There are several possible research strategies to conduct the research, this study applies survey as was considered to be the most suitable one. Survey enables to collect quantitative data which could be measured by statistical tools and the results could be quantified. Collected data will be compared with the research theory in order to approve or disapprove the premise.

2.6 Research method

Survey in the form of self-completed questionnaire was chosen as the most convenient research method to collect data for this study. The author chose this research method thanks to following characteristics. Questionnaire is the most common and popular method how to collect large amount of data in a relatively short time period. Despite of limited number of questions or missing data from not fully completed questionnaires, it

allows to compare collected data and analyse them using several statistical tools (Saunders et al., 2012).

2.7 Data collection

Generation Y is strongly dependent on the Internet, therefore this channel was chosen as an appropriate way how to collect data. To collect sufficient amount of data, the questionnaire was additionally distributed via emails.

Questionnaire for respondents from the United Kingdom was hosted on Google forms and then promoted via several groups on Facebook. The author made an effort to obtain wide range of people from Generation Y and therefore questionnaire was distributed in Facebook groups of several British universities, football clubs, lost and found groups, smartphone fans groups and other groups of different interests. Additionally, questionnaire was delivered via emails to students of the Huddersfield University. As a result, was collected answers from 258 respondents from the UK.

Data from Czech respondents were collected mainly via questionnaires hosted on Vyplnto.cz. Final count of Czech responses were reached 273.

Collected data were cleaned by the author from misleading or irrelevant answers in open-ended questions in order to prevent inaccurate results. Then, data were coded and analysed using IBM SPSS Statistics program. Initial results showed basic information about respondents and their preferences. These results were used for further examinations to test stated hypotheses in order to either prove or disprove them. To examine collected data in more detail, one way and two way ANOVA and Pearson product-moment correlation were applied.

2.8 Population

Generation Y was chosen as a population for this research. There are several reasons for this choice. Firstly, Generation Y is the biggest consumer on the market of smartphones. Secondly, there are assumptions that Millennials due to frequent interaction with their smartphones during the day tend to leave their smartphones on public places more often than other generations. Thirdly, they would probably buy some protection against loss of their smartphones as they do not want to lose personal data stored in the

device. Finally, Generation Y is usually financially supported by their Generation X parents, who might also encourage them to acquire some security solution to protect their smartphones.

2.9 Sampling

Quota sampling was chosen as the most appropriate one. Maylor and Blackmon (2005) describe this sampling as the nonprobability sampling which enables to choose only those respondents, who match characteristics stated by the researcher.

Age was determined as the most suitable characteristic for this research. Thus, respondents were divided into three groups; less than 18 years old, 18 – 35 i.e. Generation Y and more than 35. Furthermore, final ration between respondents from the Czech Republic and the United Kingdom was established to 51.4% and 48.6% respectively and therefore the objectiveness of results was sustained.

2.10 Design of the questionnaire

The research questionnaire consists of 16 questions of different type, i.e. single answer questions, multiple answer questions and the rating scale. Questions were assembled according to following key areas; ownership of the smartphone, brand preferences, experience with physical loss of the smartphone, preferred security solution and security awareness, price for such security solution and type of payment, availability of an internet connection in the smartphone, the level of willingness to show personal information, honesty in terms of returning found smartphone to the owner and last but not least, financial situation and other personal information including age, education, gender, country of residence and labour market status.

The very first question of questionnaire distinguishes respondents on those who own at least one smartphone and those who have not any. Placing this question as initial one prevents against misleading the respondent in following questions. For non-owners there was an opportunity to skip questions earmarked mainly for owners of the smartphone. Then, question focusing on brand preferences was included as these could show which brands are used the most among Generation Y.

After the initial question, first part of the questions aims on the experience of respondents with physical loss of their smartphone, preferences in brands and what security solution they are using. Last question from this part analyses an internet connection in smartphones among respondents.

To predict the number of potential customers for the new product, the question about how often Generation Y losing their smartphones was stated. Moreover, the author can use collected data from this question as a supportive material for achieving the main aim of this study.

As the success of new product might depend on human behaviour in case that they find lost smartphone, it is essential to discover how people act in such situations. Although, this research cannot cover all population, by placing the question about experience of the respondent with process of finding his lost smartphone could extend the amount of data about people who are not directly involved into to the research. These data could help to state the verdict whether people tend to return found smartphone to its owner or their behaviour create significant weakness on the new product in terms of its functionality.

Next question focuses on effort of respondents to secure their smartphones. This question was stated in order to find out what is the most favourite security solution among Generation Y and also if tracking software as potential threat for proposed product is attractive enough to be frequently used by them.

The availability of an internet connection on smartphones among Generation Y was placed as the last one from first part of questions. Author wants to support his argument that tracking software despite of its ability to localize the lost smartphone is dependent on an internet connection, which the majority of Millennials does not have constantly available.

In the second part the author puts seven questions into the rating scale in order to discover the level of security awareness and interest about security solution for smartphones among Generation Y. Additionally, the last question in the rating scale analyses the willingness of Generation Y to place some essential information on the lock screen of the smartphone.

Information about value of stored data and their confidentiality will serve for deep examination of relations between customer's perception of mobile safety with rising importance of data stored and interest in new security solution.

Another pair of questions focus on perception of safety among respondents in terms of mobile security. The analysis of these questions could reflect how much respondents perceive their personal data in smartphones to be safe. Therefore, data obtained from these questions will serve as fundamental variables for defining the demand for security solutions. Additionally, comparison between perception of safety and value of data could reveal if there are any relations. Special focus on the perception of safety in case of loss of the smartphone was conduct for the purpose of outlining the demand for specialised security solution i.e. new product.

To discover the value and the demand for security solution, two questions asking respondents how much they are interested in obtaining such solution and if they are willing to pay for it were stated. These two questions directly investigate whether respondents are keen on to obtain the solution for free or even pay for it or they do not display any interest at all.

The last question from the rating scale discovers whether respondents are willing to place some of their personal data on the lock screen of their smartphone. This question was stated for the purpose of analysing potential weakness of the new product.

In the third part of the research questionnaire the author analyses habits of respondents in terms of pricing in more detail. Questions about preferred type of payment for security and about the highest acceptable price for the security solution will help to specify optimal pricing strategy and price in general. Additionally, the question about the effort of respondents to contact the owner if they find his smartphone was defined. Data obtained from this question will challenge the functionality of the new product which is based on the goodwill of people.

Final part of the research questionnaire focuses on analysis of respondents from demographic perspective in general. The author assumes that a new product will be mostly purchased by people from Generation Y who are financially secured. To challenge this argument the research asks respondents about their perception of financial security. Although question about exact income would generate more specific results, the author

assumed Generation Y to provide inaccurate data as Millennials are mostly financially and materially supported by their parents and do not usually generate own income. Therefore, question about the exact income could not properly reflect the financial situation of respondents.

In order to better categorize obtained results, key questions about gender, age, labour market status, educational level and country of residence were stated. The question about age offers three options. First option covers group of people under 18 years old, followed by range of years of Generation Y, which is from 18 to 35, and the final option covers population over 35 years old. Typical partition on males and females will determine, which gender is more interested in new security solution. The labour market status and educational level could reflect the financial situation of respondents and therefore underpin the theory, that the product will be more popular among financially secured people from Generation Y.

Respondents from different countries could display different attitudes and therefore the question about country of residence was stated. The Czech Republic and the United Kingdom were placed as the main option.

2.11 Pilot study

The questionnaire went through several changes from the beginning. It was needed to structure questions in order to stick to the main aim of the study and its objectives. Also recommendations from the supervisor were taken into account and therefore some questions have been changed to meet these recommendations.

The most changes were conducted for the purpose of to enrich the number of options in some questions. Additionally, the question about country of residence was determined as valuable and placed at the end of the questionnaire.

2.12 Limitation of the study

Research questionnaire was distributed primarily among people in the Czech Republic and the United Kingdom, therefore the results cannot be generalized. Moreover, narrow focus just on two countries would not find the most suitable country for new security solution in a global scope.

The research is mainly focused on Generation Y, therefore other generations have only weak representation or even some of them do not have any representation in the research. Furthermore, the majority of respondents are students, which could influence results of the research as well.

Another limitation involves narrow scope of distribution channels. The questionnaire was spread among communities on Facebook and among friends of the author. For this purpose, obtained sample could not fully display reality.

The author chose the most appropriate questions according to his assumptions to answer the research question, however some additional characteristics of respondents, such as friends' or family' s influence which could enrich the final results might have been omitted.

Last but not least, results of this study might not be applied in general scope because of number of limitations hence readers should be aware of that and any interpretation of results should be taken carefully.

3 Characteristics and functionality of the suggested product

This research identified several types of mobile security solutions which could help to find the smartphone in case of its loss and analysis of such solutions was conducted as well. As a result, it was discovered that there is a potential niche on the market, which could be filled by the new security solution.

3.1 Demanded features

According to introduced solutions, following features of the newly developed product are demanded. New solution should be (1) energy independent. (2) It should not use for its functioning any kind of signals e.g. Wi-Fi connection, GPS, radio waves etc. (3) Easy implemented, (4) easy to use and (5) multiplatform friendly, which means to be perfectly working on all smartphone devices regardless the operation system, resolution of the smartphone or other technical specifications. Furthermore, the proposed solution (6) should run in the background at the most and (7) should not disturb user by frequent updates or notifications. Moreover, solution (8) should not use any other essential external gadget for its functioning or (9) do not use third-party software such as Google Maps for locating the lost smartphone. Another requirement is that proposed product (10) should not be a part of any security package, where customers have to pay for a whole package even if they want only one part of it. Finally, the proposed product (11) should work without any big effort of the owner to look for the lost phone.

3.2 Proposed product

Previously stated demanded features were used as a pattern, objectives, which need to be accomplished in order to create new unique security solution. New proposed product fulfils these objectives in all points and therefore it may help to find the lost phone more effectively.

New proposed product consists of two main parts, passive and active and both of them are essential for proper functioning. Passive part introduces online storage for personal information about smartphone owner, which serves for returning the smartphone to the owner. In much simple way, the owner puts his personal information on his personal website, which will be password protected. On this website the finder will be able to find

key information, such as in what place exactly to return the found smartphone or how to contact the owner. However, the finder needs to know the password first, which connects the passive part of the product with its active part.

While privacy of the smartphone owner has to be respected, the only place where the finder may have access is on the lock screen of the phone and that is the place where the active part will operate. Active part of proposed product consists of wallpaper, which needs to be set on the lock screen, and of website link and password. Link will indicate where the finder could find information about the owner and the password will allow him to access these information.

The author identified some disadvantages in functionality of the proposed product. First issue is connected with independency on the energy. Although the product itself does not need any source of energy in order to work properly, it requires the smartphone to be turned on. Secondly, once the phone has been lost the finder needs to make an effort to find the owner. Finally, in order to find the phone the finder needs to visit the website with contact information about the owner, which requires an internet connection. This could be a problem in case of not having an internet connection either in mobile phone or at all.

Furthermore, the author describes in more detail each of demanded features in connection with proposed solution.

- Energy independent

With regards to GMI (2014, cited by Arthur, 2014), proposed security solution has to have low demands on energy consumption or at best none. Only when this objective will be achieved consumers will not tend to turn off the product. The author bears in mind this issue and as a result the proposed security solution does not need any source of energy for itself. However, the phone needs to have some energy left.

As the product consists of website and wallpaper only, there is no needed any additional energy requirements.

- Ability to work without any kind of signal

One of the stated objectives requires security solution which is free from any source of energy. While tracking solutions are connected with some kind of signal, they are considered as being heavy on battery consumption (Root Uninstaller Team, 2012). The author considers this as a disadvantage, which creates potential niche on the market for proposed product.

As the product works differently from the rest of solutions, the absence of GPS, Wi-Fi or other technology for locating the lost phone does not affect its functionality.

- Easy installation

After registration and filling in the necessary contact information for the website, the owner can customize wallpaper for his phone and then download it directly into his phone. The last step in the installation process is to put downloaded wallpaper on the lock screen of the phone.

The best way is to make all these steps on the device, which will use this product afterwards. However, wallpaper is possible to send via email or download on the device and then upload it via cable or other software directly into the phone.

The installation process will be clear and easy to follow and everybody will be able to make it by himself without any extra knowledge of technology.

- User-friendly and customizable environment

Simple design and clear structure of the website will make the registration process easy to handle and very intuitive.

Graphical User Interface (GUI) offers almost infinite customization of the final product. User has an opportunity to create security wallpaper by himself. Each change will be proceeded through the website, where users will be able to upload their favourite backgrounds or choose from predefined backgrounds. Everything is fully customizable except of necessity to display the link on the wallpaper, which is essential for this security solution.

- Multiplatform support

What makes the proposed solution multiplatform friendly is the tight connection with lock screen and ability to put the wallpaper on the lock screen. Basically every device fulfilling these two requirements is suitable for the proposed product to be used in.

According to analysis conducted by the author of this thesis, the proposed security solution is applicable on most popular smartphones and tablets.

- Running in the background at the most

In comparison with different security solutions which are dependent on some kind of signal and hence some of their parts are running in the background of the phone constantly, the proposed product will "stand" in the background thanks to being just a wallpaper. It means that none of its parts needs to run and communicate for instance with Wi-Fi or GPS.

- No notifications

The ability of the software to run on the background also underpins the respect to the privacy of the user. It is not unusual that smartphone owners are very often interrupted by plenty of notifications from installed applications.

The proposed product does not require any type of attention. After installation and placing the wallpaper on the lock screen, any other attention will not be needed.

- No external gadgets necessary for correct functioning

The author introduced two core parts of the proposed product, which together provide demanded solution in case of loss of the phone. Both parts have character of the software and therefore there is no need for any additional hardware for proper functioning of the product.

- No dependency on the third party software

According to Kaspersky Lab survey (2014), only less than half of small businesses use third-party virtual servers for storing their data. Additionally, third party software might contains some security vulnerabilities, which could stay hidden from company awareness and therefore consumers' safety might be endangered (Forrester Consulting,

2011 cited by Saran, 2011 and Larson, 1995). Based on these findings the proposed product will run mainly on servers located in and owned by the company providing the security solution without use of third party servers.

Furthermore, proposed product is independent on any additional third party software in order to protect customers, lower the risk and increase the transparency of the whole service.

- Independent on any other security products

Plenty of security products solve several security issues at the same time and this universality is very often reflected in the price for such security package. However, pure focus on the theft is evident only in a few of them.

The proposed security solution specialises on the theft only hence it could better meet the needs of those people who are interested in anti-theft solution only and do not want to pay for any other additional security solution such as antivirus or firewall.

- Opportunity to find the phone without extra effort

Products using tracking technologies are able to track the lost phone with solid accuracy, however these require the owner to make an effort to find the phone.

On the other hand, the proposed solution uses for its functioning human factor in terms of honesty to return the phone. Such idea makes this solution unique, because other analysed solutions requires owner's effort to find the phone, whereas proposed product will work in the opposite direction and basically the finder or the phone itself will find the owner.

4 Analysis of collected data

4.1 Profile of respondents

Based on collected data the author created profile of respondents, which gives the picture about the sample structure in general. Then some of the data will be used to either prove or disprove stated hypotheses.

Total number of respondents is 531, while having 182 males and 349 females (Table 4.1).

Table 4.1 Gender of respondents

Gender

		Frequency	Percent
Valid	Male	182	34,3
	Female	349	65,7
	Total	531	100,0

Table 4.2 Age of respondents

Age

Age		Frequency	Percent
Valid	18 - 35	531	100,0

Table 4.2 shows age of respondents. The focus of this research is on Generation Y only hence questionnaires were delivered only on those places where was expected mainly the presence of Generation Y (individuals between 18 and 35 years).

Furthermore, Table 4.3 shows that 273 respondents are from the Czech Republic and 258 respondents are from the United Kingdom.

Table 4.3 Country of residence of respondents

Country of residence

		Frequency	Percent
Valid	Czech Republic	273	51,4
	United Kingdom	258	48,6
	Total	531	100,0

With regards to Table 4.4, the most of respondents are students followed by those who are fully employed.

Table 4.4 Labour market status of respondents

Labour market status

		Frequency	Percent
Valid	Student	422	79,5
	Full time employment	56	10,5
	Part time employment	16	3,0
	Unemployed	9	1,7
	Self-employed	18	3,4
	Other	10	1,9
	Total	531	100,0

In Table 4.5 could be seen that level of education of respondents is mainly split into Secondary A-Level and University education level.

Table 4.5 Education of respondents

Education

		Frequency	Percent
Valid	Primary education	14	2,6
	Secondary A-Level	284	53,5
	University education	229	43,1
	Secondary GSCE education	4	0,8
	Total	531	100,0

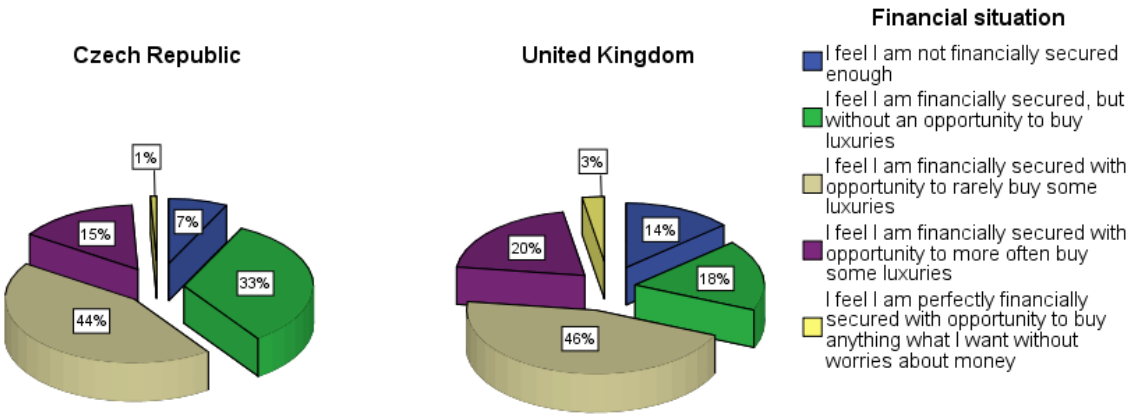

Figure 4.1 Financial situation of respondents

According to Figure 4.1, Generation Y tend to consider themselves financially secured; only 7% respondents from the Czech Republic and 14% respondents from the United Kingdom feel that their actual financial situation cannot secure them enough. In terms of financial security, no significant differences between the Czech Republic and the United Kingdom were observed.

As shown in Table 4.6, the vast majority of respondents own at least one smartphone. In the Czech Republic only every fifteenth from Generation Y does not own the smartphone and in the UK the number of smartphone owners is even higher, evaluating that only every 1.2 % of Millennials does not own a smartphone. These results shows that there is obvious popularity of smartphones among Millennials.

Table 4.6 Smartphone ownership

Smartphone ownership in Czech Republic and United Kingdom

			Country of residence		Total
			Czech Republic	United Kingdom	
Smartphone ownership	Yes	Count	256	255	511
		% within Country of residence	93,8%	98,8%	96,2%
	No	Count	17	3	20
		% within Country of residence	6,2%	1,2%	3,8%
Total		Count	273	258	531

In terms of popularity of mobile brands, the most popular in the UK is Apple followed by Samsung, other brands are sporadic. Brand market share in the UK is mostly held by Apple (53.49%) and Samsung (24.81%). Only every fifth smartphone in the UK have different brand than Apple or Samsung (Appendix B).

Situation in the Czech Republic is slightly different in terms of market share. Samsung holds 25.18% of the total market share followed by Sony with 13.87%, Apple and Nokia with similar 10.95% of the total market share. Czech mobile market is according to this research more diversified. (Appendix C).

With regards to number of smartphone losses, Figure 4.2 shows that British owners of smartphones tend to lose their phones more often than respondents from the Czech Republic. In more detail, almost half of respondents from the UK has already lost their smartphone at least once, which is significantly higher percentage than in the Czech Republic, where only 16% of respondents admit to lose the smartphone. However, there is also high number of those who have never lost their phone in both countries. It seems that Czechs look after their phones more carefully as nearly 84 % of them claim to have never lost their phone compared to 56 % of Britons.

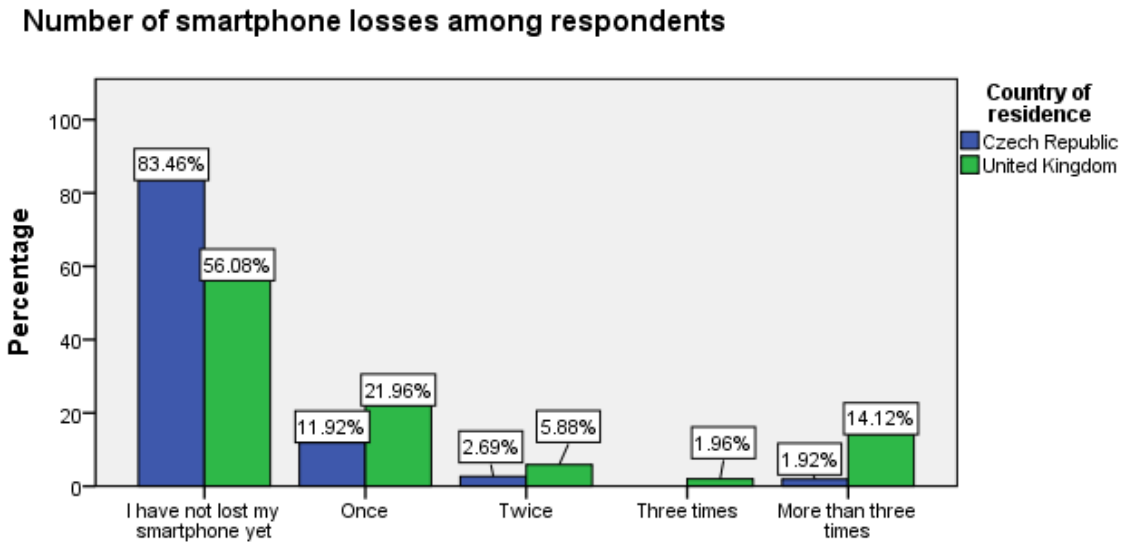

Figure 4.2 Smartphone losses

When looking at genders, as shown in Figure 4.3, females admit to lose phones more frequently than males.

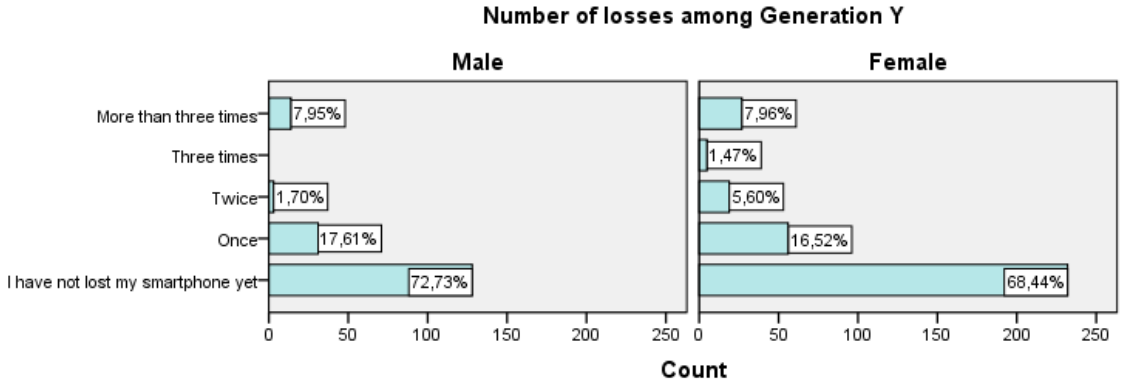

Figure 4.3 Number of losses among Generation Y between genders

Furthermore, those who had lost their smartphone stated that it has not always been found again. Respondents from the United Kingdom as well as from the Czech Republic answered that one fifth of them have never found their smartphone (Figure 4.4).

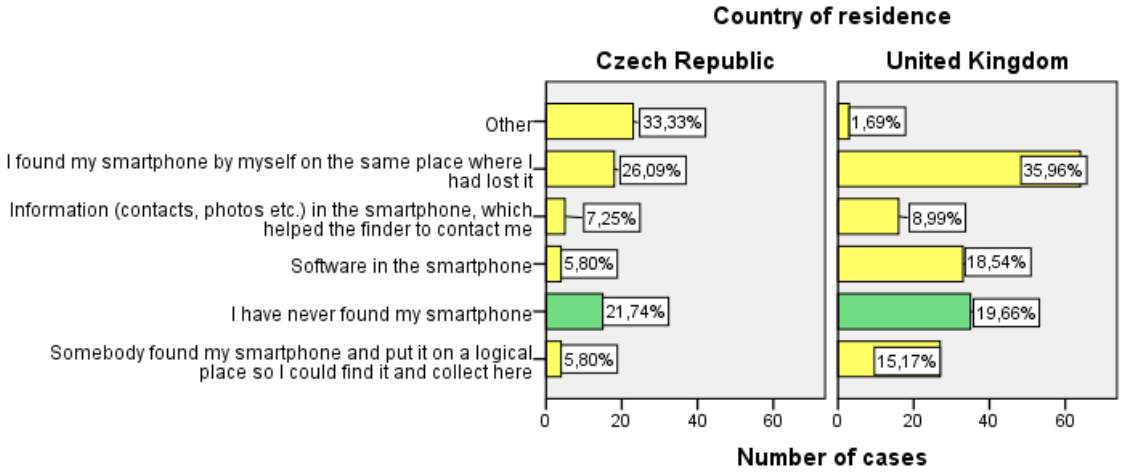

Figure 4.4 What help respondents to find their smartphone

Figure 4.5 provides an overview of how are people from both countries willing to make an effort to find the original owner of the phone which they find. It was shown that people in both countries would make either big effort or at least some in order to return the phone to the owner. People from the UK are willing to make an extensive effort to find the original owner (nearly 54 %), people from the Czech Republic are less active in terms seeking the owner and only 36 % would try hard. Nevertheless, Czechs would from

42 % try to find the owner in case they could easily find him. Therefore it appears that the proposed product would be successful as people who find the lost phone would participate on seeking the original owner. Moreover, these findings support the idea of product which does not require constant internet connection.

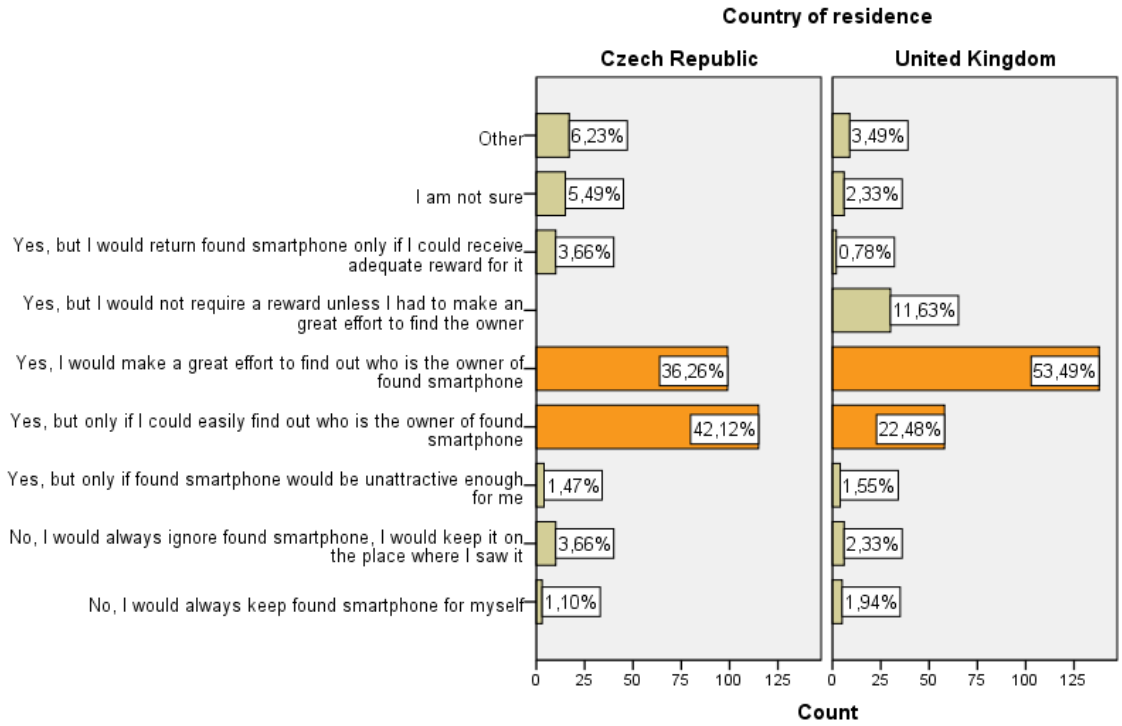

Figure 4.5 Willingness to return the found smartphone

An internet connection as an essential part for the most of tracking software has to be constant in order the software to be fully functioning. But this study examined that only 40% Britons can be constantly online in the UK as well as abroad. Moreover, more than 10% of British respondents are dependent on Wi-Fi connection, which does not correspond with results from Mintel (2015), which claim that only 1% of all smartphone consumer do not have an internet connection in their phone. In the Czech Republic, the functionality of tracking software can be ensured only from 60% in the homeland and 15% abroad. As a result, existing tracking softwares due to the need of constant internet connection may become easily less effective and not serving its purpose properly. Thus, the demand for non-internet based security solution might be encouraged by this fact as well (Figure 4.6).

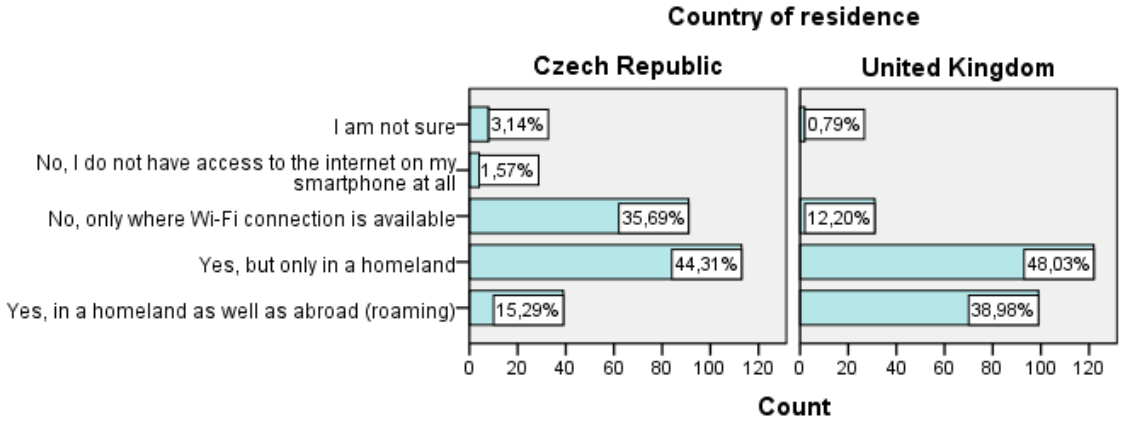

Figure 4.6 Mobile internet

Finally, the author considered appropriate to ask respondents if they find data stored in their smartphones confidential and valuable. As shown in Figure 4.7 and Figure 4.8, more than half of respondents consider their data valuable and confidential. Furthermore, when looking at differences between genders, some differences were found in terms of attitudes toward confidentiality of data stored in a smartphone and its value. In this case, males marked themselves slightly more confident in terms of data protection than females.

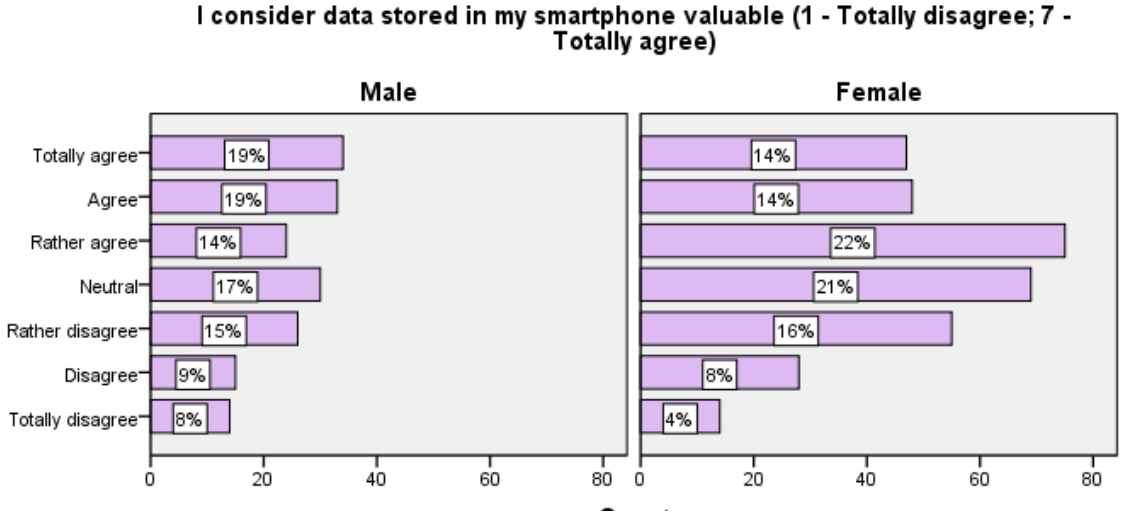

Figure 4.7 Value of data stored in the smartphone

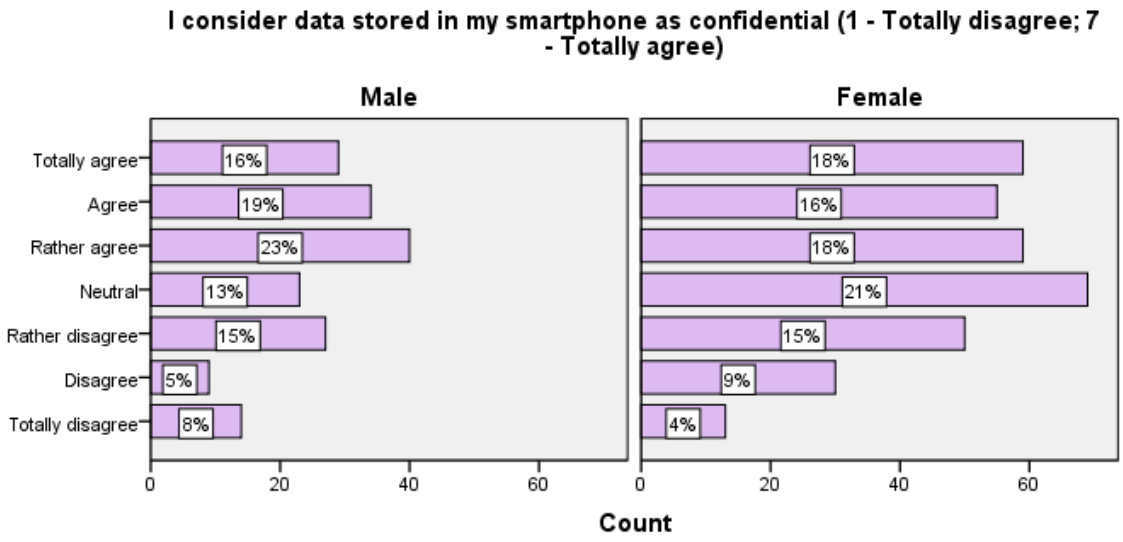

Figure 4.8 Confidentiality of data

4.2 Analysis

Hypothesis 1: There will be demand for new security solution which could help to find the smartphone in case of its physical loss among Generation Y.

Initially, two-way between-group ANOVA test was conducted in order to discover the impact of gender and country of residence on the interest in new security solution. Two groups, males and females, were asked to answer the statement "If on the market existed some security solution, which would raise the chance to find my smartphone in case of its loss, I would be interested in it" in range from 1 (Totally disagree) to 7 (Totally agree) in order to discover whether there is any difference between males and females and their interest about new security solution or not. Results have shown, that there was a statistically significant interaction effect between gender and country of residence, $p = .004 < .05$. There was a statistically significant main effect for country of residence, $p = .000 < .05$, however the effect size was small, Partial Eta Squared = .031. Gender had not statistically significant main effect, $p = .06 > .05$. (Table 4.7). Therefore it may be assumed that while country of residence affects the level of interest, gender does not have an impact.

Table 4.7 ANOVA two-way between-groups analysis for Interest in solution/Gender/Country of residence

ANOVA test for Interest in solution/Gender/Country of residence

Dependent Variable: Interested in solution

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	75,845[a]	3	25,282	8,113	,000	,046
Intercept	9103,602	1	9103,602	2921,504	,000	,852
sex	11,073	1	11,073	3,554	,060	,007
residence	50,736	1	50,736	16,282	,000	,031
sex * residence	25,925	1	25,925	8,320	,004	,016
Error	1579,846	507	3,116			
Total	11954,000	511				
Corrected Total	1655,691	510				

a. R Squared = ,046 (Adjusted R Squared = ,040)

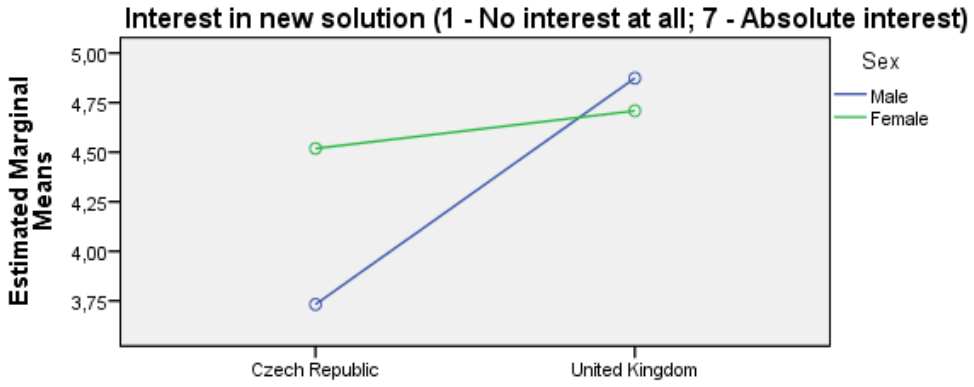

Figure 4.9 Interest in new security solution between males and females

From the Figure 4.9 is evident that Millennials from the United Kingdom are more interested in new security solution in general. Males from the UK displayed slightly higher interested with mean score, M = 4.87 than females (M = 4.71). Males from the Czech Republic expressed rather no interest with mean score M = 3.73, while females are rather interested in new security solution with mean score M = 4.52.

This analysis revealed positive results in terms of interest in new security solutions. Three from four tested variables, i.e. females from the CZ and females and males from the UK show certain level of interest while males from the UK showed the highest level of interest. Only males from the Czech Republic do not have any interest at all.

Then, the author used one way between groups ANOVA test in order to test potential factors which might influence the level of demand for the product. Test was made in order to determine if females feel less secured against physical loss than males (Table 4.8). Males and females were asked if they agree or disagree with the statement "I consider my smartphone secured enough against physical loss" in range from 1-Totally disagree to 7-Totally agree. Level of significance $p = .00 < .05$ showed significant difference between genders.

Table 4.8 ANOVA test for Gender/Perception of safety in terms of physical loss of the smartphone

ANOVA test for Perception of safety/Gender

Secure against physical loss of the smartphone

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47,242	1	47,242	17,314	,000
Within Groups	1386,109	508	2,729		
Total	1433,351	509			

Figure 4.10 introduces the exact level of difference, where females consider their security against physical loss as insufficient with mean score M = 3.04. Males feel more secured against physical loss with mean score M = 3.68, however they are still not satisfied with level of security against physical loss.

Both genders expressed doubts about their existing ‘anti-loss’ security. This statement might give the explanation, why Millennials display certain level of interest in security solution.

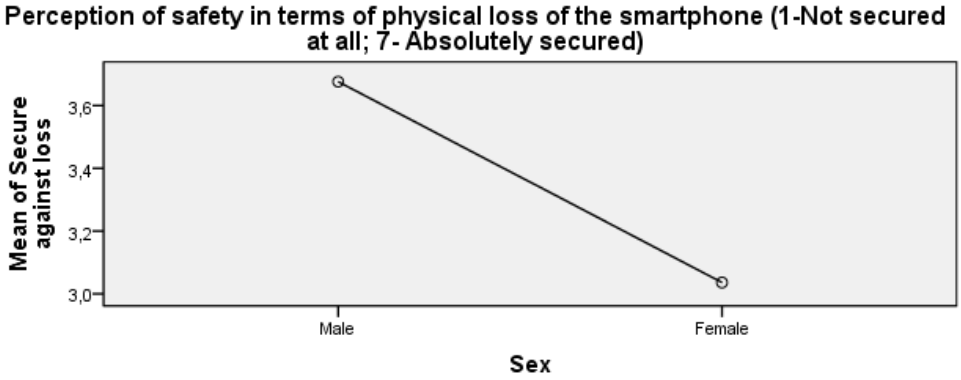

Figure 4.10 Perception of safety in terms of physical loss of the smartphone among Generation Y.

Additionally, the author investigated the relationship between interest in new security solution and the level of education and financial situation of respondents using Pearson product-moment correlation coefficient. It was discovered that none of these variables has any significant relationship with interest in security solution, however the level of education with very small positive correlation with level of significance r= .091 was close to small strength. Additionally, almost neutral relationship was examined for financial situation, r = - 0.016 (Table 4.9).

Pearson product-moment correlation did not discover any statistically significant relationship between interest in security solution and financial situation or educational level of respondents. Therefore, respondents are interested in solution without any differences in their financial situation or educational level.

Table 4.9 Correlations between interest in new security solution, educational level, and financial situation

Correlations

		Interested in solution	Education	Financial situation
Interested in solution	Pearson Correlation	1	,091*	-,016
	Sig. (2-tailed)		,039	,712
	N	511	511	511
Education	Pearson Correlation	,091*	1	,032
	Sig. (2-tailed)	,039		,458
	N	511	531	531
Financial situation	Pearson Correlation	-,016	,032	1
	Sig. (2-tailed)	,712	,458	
	N	511	531	531

Based on the analysis, this hypothesis was partly rejected due to no interest in security solution from males living in the Czech Republic.

Hypothesis 2: Millennials, who have valuable and confidential data in their smartphone will be interested in new security solution and will be willing to pay for it.

In order to discover relationship between importance of the data stored in the smartphone and interest about new security solution, the author uses Pearson product-moment correlation coefficient (Table 4.10). From the results it is evident, that both variables (valuable and confidential level) have positive correlation of medium strength with the level of interest in new security solution, r = .480, r = .379. Thus, the more valuable and confidential data, the higher level of interest.

From Pearson product-moment correlations is evident that individuals who store valuable and confidential data in their smartphone would be more likely interested in new security solution. Both variables have significant effect of medium strength, while the value of data influences the level of interested more than their confidentiality.

Table 4.10 Correlation between interest in new security solution and level of data importance stored in the smartphone

Correlations between interest in security solution and level of data importance

		Interested in solution	Valuable data	Confidential data
Interested in solution	Pearson Correlation	1	,480**	,379**
	Sig. (2-tailed)		,000	,000
	N	511	511	511
Valuable data	Pearson Correlation	,480**	1	,581**
	Sig. (2-tailed)	,000		,000
	N	511	512	511
Confidential data	Pearson Correlation	,379**	,581**	1
	Sig. (2-tailed)	,000	,000	
	N	511	511	511

**. Correlation is significant at the 0.01 level (2-tailed).

Then, the relationship between willingness to pay for new security solution and the level of data importance and confidentiality was investigated using Pearson product-moment correlation coefficient. Positive correlation of small to medium strength occurred for both variables (valuable data, r = .292 and confidential data, r = .206), which indicates that Generation Y is with rising importance and confidentiality of data more willing to pay for security solution (Table 4.11).

Table 4.11 Pearson product-moment correlation between Willingness to pay and the level of data importance

Correlations between Willingness to pay/ Valuable and confidential data

		Willing to pay	Valuable data	Confidential data
Willing to pay	Pearson Correlation	1	,292**	,206**
	Sig. (2-tailed)		,000	,000
	N	509	509	509
Valuable data	Pearson Correlation	,292**	1	,581**
	Sig. (2-tailed)	,000		,000
	N	509	512	511
Confidential data	Pearson Correlation	,206**	,581**	1
	Sig. (2-tailed)	,000	,000	
	N	509	511	511

**. Correlation is significant at the 0.01 level (2-tailed).

Furthermore, this research conducted a two-way between-groups analysis of variance to investigate the impact of country of residence and gender on willingness to pay for new security solution. Significance p = .087 indicates that there is no significant interaction effect between gender and country of residence. There was statistically significant main effect for gender (p = .035), which means that genders significantly differ in terms of willingness to pay. On the contrary, there was no statistically significant main effect of country of residence (p = .289) on willingness to pay, which means that the level of willingness to pay does not differ across countries (Table 4.12).

Table 4.12 ANOVA test for Willingness to pay/ Country of residence/ Gender

ANOVA

Dependent Variable: Willing to pay

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	29,910[a]	3	9,970	3,401	,018	,020
Intercept	5143,099	1	5143,099	1754,285	,000	,776
gender	13,133	1	13,133	4,480	,035	,009
residence	3,302	1	3,302	1,126	,289	,002
gender * residence	8,641	1	8,641	2,947	,087	,006
Error	1480,526	505	2,932			
Total	7404,000	509				
Corrected Total	1510,436	508				

a. R Squared = ,020 (Adjusted R Squared = ,014)

As shown in Figure 4.11 there are only small differences in mean scores between genders; males (M = 3.14 in the Czech Republic and M = 3.24 in the United Kingdom), females (M = 3.75 in the Czech Republic and M = 3.3 in the United Kingdom). Moreover, respondents are generally not willing to pay for security solution. Moreover, males are even less willing to pay than females. Close to neutral attitude towards willingness are females from the UK. Males from the Czech Republic are least willing to pay.

Analysis has shown that though with rising importance and confidentiality of the data stored in smartphone increases also the willingness to pay for security solution which would protect the smartphone against its physical loss, people are generally not willing to pay for such solution.

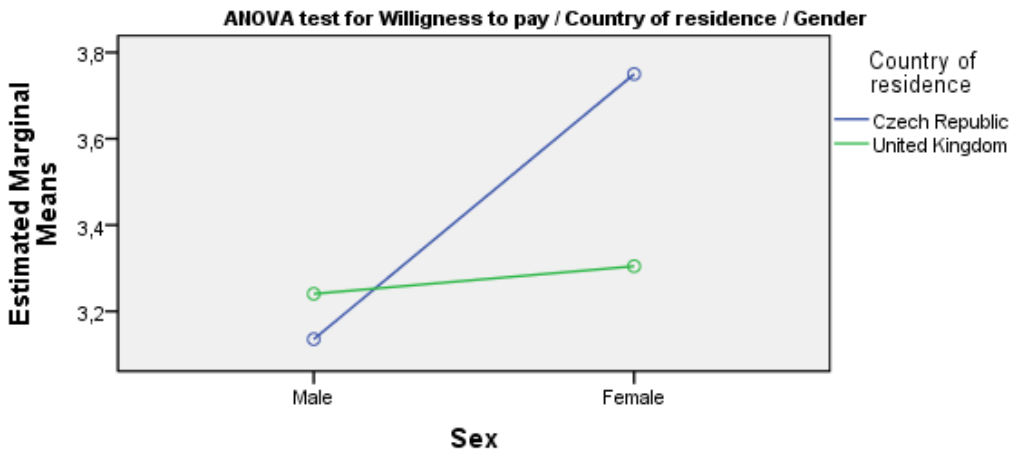

Figure 4.11 Perception of safety in terms of physical loss of the smartphone among Generation Y.

Then, the author investigated the relationship between willingness to pay for new security solution and financial situation of the respondents. Additionally, respondents were observed in more detail hence their country of residence and gender were taken into account. Using Pearson product-moment correlation coefficient only very small positive correlation between willingness to pay and financial situation (r = 0.073) was discovered. It means that financial situation have rather neutral effect on consumer behaviour in terms of willingness to pay for new security solution (Table 4.13).

Table 4.13 Pearson product-moment correlation between Willingness to pay/Financial situation

ANOVA

		Willing to pay	Financial situation
Willing to pay	Pearson Correlation	1	,073
	Sig. (2-tailed)		,101
	N	509	509
Financial situation	Pearson Correlation	,073	1
	Sig. (2-tailed)	,101	
	N	509	531

Analysis revealed that Millennials are not willing to pay for security solution without any significant difference in their financial situation, gender or country of residence. On

the contrary, those individuals who have valuable and confidential data in their smartphone expressed higher interest in security solution. Higher value or confidentiality of data reflects higher interest in security. Based on these findings the second hypothesis was partly rejected.

Hypothesis 3: Millennials, who do not have their smartphones secured enough, will display higher number of losses and therefore will be interested in new security solution

Pearson product-moment correlation was used in order to discover the relationship between number of losses of smartphones and perception of Millennials in terms of smartphone security. Negative correlation of very small strength (r = - 0.039) between number of losses and smartphone security was revealed, which means that the more the individual from Generation Y loses his phone the less he feels secured (Table 4.14).

Table 4.14. Pearson product-moment correlation for Number of losses / Level of mobile security

Correlations for Number of losses / Level of mobile security

		Secure enough	Ever lost phone
Secure enough	Pearson Correlation	1	-,039
	Sig. (2-tailed)		,385
	N	509	509
Ever lost phone	Pearson Correlation	-,039	1
	Sig. (2-tailed)	,385	
	N	509	515

Then, using Pearson product-moment correlation the author examined whether there is any relationship between interest in new solution and perception of mobile security of respondents. Positive correlation of small to medium strength (r = .261) between two variables was discovered, with high level of perception of mobile security associated with high level of interest in new security solution. This result indicates that Millennials who are more careful and perceive their smartphone to be secured enough, are also more

interested in improvement of their current level of mobile security by obtaining another one (Table 4.15).

Table 4.15 Pearson product-moment correlation between Interest in new security and Perception of mobile security

Correlations between Interest in new security solution/ Perception of mobile security

		Secure enough	Interested in solution
Secure enough	Pearson Correlation	1	,261**
	Sig. (2-tailed)		,000
	N	509	509
Interested in solution	Pearson Correlation	,261**	1
	Sig. (2-tailed)	,000	
	N	509	511

**. Correlation is significant at the 0.01 level (2-tailed).

Then, the author tested with Pearson product-moment test relationship between number of smartphone losses and interest in new security solution. As shown on Table 4.16, positive correlation of small strength (r = 0.131) between variables was examined. This means that those individuals from Generation Y who tend to lose their smartphone more frequently display higher level of interest in new security solution.

Table 4.16 Pearson product-moment test for Interest in new security solution/Number of smartphone losses

Correlations between Interest in new security solution/Number of losses

		Ever lost phone	Interested in solution
Ever lost phone	Pearson Correlation	1	,131**
	Sig. (2-tailed)		,003
	N	515	511
Interested in solution	Pearson Correlation	,131**	1
	Sig. (2-tailed)	,003	
	N	511	511

Additionally, the author assumed that higher interest in solution among Britons discovered in the first hypothesis might be influenced by higher number of smartphone losses in the UK. As shown in Figure 4.12, Britons admit to have lost phone more times than Czechs; 73 % out of all occurred losses happened in the UK.

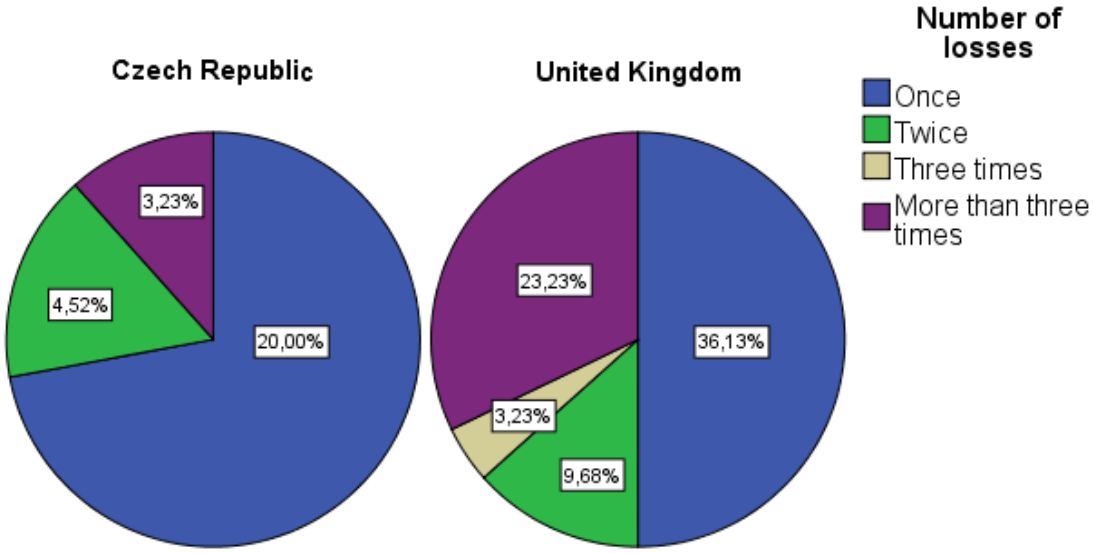

Figure 4.12 Number of losses in both countries

From the analysis of the third hypothesis existing relationship between number of losses and the interest in security solution is evident. Millennials with higher number of losses displayed higher level of interest than those who have not lost their smartphone yet. Additionally, individuals from Generation Y expressed doubts about their mobile safety more intensively with every other loss they experienced. Surprisingly, those Millennials, who consider themselves as secured enough, displayed higher level of interest in new solution. Based on these findings the third hypothesis was not rejected.

5 Research findings and recommendation

5.1 Hypothesis 1

The main aim of this hypothesis was to discover whether Generation Y express any level of interest in new security solution which could help them to find the smartphone in case of its loss.

In general, the existence of demand for security solution was proven among Millennials from both examined countries. This might be caused by the fact that considerable percentage of Generation Y has ever lost their smartphone, therefore they express interest in solution which could prevent similar situation in the future. However, slight differences in particular genders and countries occurred.

Results have shown slight differences between males and females, while females were more interested than males in general. Males from the UK displayed the highest interest. On the contrary, males from the Czech Republic did not express any interest. Females are interested in security solution in both countries.

Some differences in demand for security solution were also found between countries. Millennials from the Czech Republic showed lower interest than Millennials from the United Kingdom. This is assumed to be caused by lower number of losses in the Czech Republic in comparison with the UK. Majority of respondents from both countries expressed the interest to obtain new security solution.

Then, the level of perceived security against physical loss was examined between genders and was shown that males feel more secured than females. This might be caused by the fact that females admit to lose the phone more frequently than males, therefore might feel weaker security against physical loss. Moreover, neither males nor females feel that their phone is sufficiently secured against physical loss.

Additionally, the author examined the relationship between interest in new security solution and level of education, and financial situation of an individual. As a result, there were found correlations for each of these variables, however relationship between interest in new product and stated variables was rather negligible. Thus, no effect of education nor financial situation on the level of interest was proven. This might be connected with

the Maslow's pyramid of needs, where the need of safety and security is one of the most important and needs to be satisfied primarily right after basic physiological needs. Therefore, due to its significant importance, the financial situation nor education does not appear to have a major impact on consumer behaviour in fulfilling this need as consumer feels that it must be fulfilled regardless these two demographic aspects.

5.2 Hypothesis 2

In hypothesis 2 the author investigated if those Millennials who have more valuable and confidential data in their smartphones are more interested in new product and if they are willing to pay for such product. For this purpose, Pearson product-moment correlation was used.

It was found out that both variables have positive correlations of medium strength on the level of interest about new product. With regards to this statement is evident, that those Millennials who have valuable and confidential data in their smartphones are likely to be interested in new product.

This is assumed to be caused by natural need to have all valuable and confidential data sufficiently secured.

On the contrary, there were only very small strength relationship between willingness to pay and value of data. In comparison of both countries there were found different attitudes between genders in each country. In total, females expressed higher willingness to pay for new product than males in both countries. Furthermore, females from the Czech Republic expressed higher willingness to pay than those from the United Kingdom. On the contrary, males from the United Kingdom expressed higher willingness to pay in contrast to males from the Czech Republic, however there were discovered only negligible differences. Nevertheless, the willingness to pay is generally very low to negative.

Based on observed results, it was shown that the interest in new security solution and willingness to pay for it rises with the confidentiality of the data stored in smartphone. However, Generation Y is not generally willing to pay for security solutions and prefer free variants of security products. This study also revealed only small influence of Millennial's financial situation on willingness to pay for security solution, which supports

Maslow's theory that people prefer satisfy their needs no matter how much money they have.

5.3 Hypothesis 3

Hypothesis 3 aimed at testing the relationship between number of smartphone losses and the level of mobile security among Generation Y. Then, the hypothesis tested whether the number of losses could influence the interest in new security solution.

According to results, negative relationship between security and number of losses was discovered which means that with every other loss of the smartphone the individual feels less secured. Moreover, this statement is supported by higher interest in new security solution among those individuals from Generation Y, who tend to lose their smartphones.

Moreover and surprisingly, it was found that with better and higher level of security, the level of interest in new additional security increases. This is assumed to be caused by punctuality of people; those who make an effort to secure their smartphone are more likely to even improve the security that those who do not secure their device at all.

5.4 Recommendation

Research has shown that there is an existing interest in proposed mobile security solution. Based on that, the author recommends the optimal target group. In wider context, the product should be targeted to people who have already experienced the mobile phone loss. In narrower scope, females were identified as more interested in general hence the focus should be put primarily on them. Additionally, the emphasis in product marketing should be put on people who have confidential and valuable data stored in their phones as these expressed higher level of interest.

Moreover, it was discovered that Millennials are not willing to pay for such security solution. Following this statement, new security solution should be offered for free and therefore the source of profits should be lied in non-core activities such as rent of advertising spaces or another option is to become a part of wider package with other security products.

With regards to the future research, the author would recommend to conduct the research with focus on more age cohorts in order to get broader picture. This research was focusing on Generation Y only, but other generations are active users of mobile phones as well therefore they might express a certain level of interest in proposed solution. Additionally, future researchers of this topic might consider to conduct the research in more countries across the world in order to get more accurate and broader insight into if and to what extent are people interested in proposed mobile security solution.

6 Conclusion

The main aim of this paper was to investigate the level of interest in new security solution for smartphones in case of its loss among adult Millennials. Motivation for this research was to discover the effectiveness of existing security solutions for smartphones and therefore to determine whether there is potential niche for new product. In order to analyse the level of interest in different countries the Czech Republic and the United Kingdom were selected to conduct the research.

Generation Y was chosen as the most appropriate group to conduct this research because of their frequent usage of smartphones. Furthermore, it was examined that the vast majority of all Millennials in modern countries own at least one smartphone and therefore it creates a large group of potential consumers for new security solution.

The analysis of mobile security market was conducted in order to investigate existing products, their functionalities, and weaknesses and thereby stated characteristic of proposed product, which could be demanded by Millennials.

Then, in the research part the aim was to analyse the level of interest for each country and determine, which market is more interested in new security solution if any. Primary data was collected via online questionnaires and then used to either prove or disapprove stated hypothesis.

The author tested following hypothesis:

- There will be demand for new security solution which could help to find the smartphone in case of its physical loss among Generation Y
- Millennials, who have valuable and confidential data in their smartphone will be interested in new security solution and will be willing to pay for it.
- Millennials, who do not have their smartphones secured enough, will display higher number of losses and therefore will be interested in new security solution

First tested hypothesis was partly rejected. There were found some differences between countries as well as between genders. Males from the Czech Republic do not display any interest in proposed security solution. Females from the Czech Republic displayed interested in security solution, however the level of interest was neutral to mild. On the other hand, Britons showed higher interest in proposed product in general, where

higher interest was observed among males. Females expressed the interest in both countries, which is assumed to be connected with the fact that they perceive their security against physical loss less sufficient than males. Additionally, this research revealed that financial situation, labour market status and educational level of respondents do not have effect on the level of interest.

Second hypothesis was neither proved nor rejected, because the research discovered positive relationship between interest in new solution and confidentiality and value of data stored in a smartphone. Millennials who consider their data valuable and confidential would more likely to be interested in new security solution. On the contrary, Generation Y in both countries expressed lack of interest in terms of willingness to pay for proposed solution.

Third hypothesis was proven to be right as relationship between numbers of losses and concerns about unsatisfactory of existing security among Generation Y was found. It was proven that alongside with rising number of losses the perception of mobile safety decreases. Moreover, this statement was supported by evidence that 'losers' showed higher level of interest in new security solution growing with every other loss. Furthermore, those Millennials who appeared to be punctual in terms of mobile security, turned out to be even more interested in additional security solution.

To sum up, the research and analysis have revealed existing demand for new mobile security solution, therefore it may be assumed that it is worth to launch product which is not dependent on an internet connection as many people do not have an opportunity to be constantly online. Moreover, as people turned out to be willing to return the phone to the original owner if they find it, it corresponds with the initial requirement that the product should properly work without any big effort of the owner to look for his lost phone. Moreover, while the most of existing security solutions requires the owner to make an effort and seek for the phone, proposed product would work the other way round and encourage the founder to easily return the phone to the owner.

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List of abbreviation

CEIR	Central Equipment Identity Register
CID	Cell ID
CZ	Czech Republic
EDGE	Enhanced Data GSM Environment
GMI	Global Mapping International
GPS	Global Positioning System
GSM	Global System for Mobile communication
GSMA	Groupe Speciale Mobile Association
GUI	Graphical User Interface
IBM	International Business Machines Corporation
LAC	Local Area Code
MNC	Mobile Network Code
OS	Operation System
RFID	Radio Frequency Identification
SPSS	Statistical Package for the Social Sciences
UK	United Kingdom

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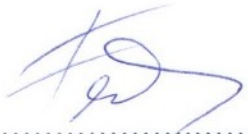

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Ondřej Franek

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Appendix D Questionnaire used for the United Kingdom

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Appendix A

Table 1 Characteristics of secure designs (Whitehead et al., 2007, p.41)

Identifiable	These are products that are identifiable by their owner. Identification may be, but is not limited to, visual property marking, such as etching. UV marking or license plates.
Neutral	Anti-theft design features should not adversely affect the user's experience. The feature should not make a product more difficult to handle or carry, or have other adverse consequences (for example RFID can also be interpreted and misused by criminals seeking to locate valuable products).
Seen (to be protected)	Being seen to be protected promotes deterrence by increasing the perceived risk. House and vehicle security are promoted by flashing lights and alarm boxes.
Attached	A product which is attached, whether spatially or electronically linked, to its desired location or owner, will be safer. Computers fixed to room fittings have this characteristics.
Findable	If lost or stolen, the product can be tracked and found. Tracker, Lo-Jack, and other car trackers allow them to be found. A lost or stolen mobile phone might be found by calling its number.
Executable	The product or device can be deactivated or otherwise rendered useless if lost or stolen, preferably remotely.
Hidden	A product which is hidden about the person or otherwise, and not used in an overt manner. British Crime Survey data suggests 25 % of mobile phone thefts involve phones being used or overtly on display at the time.
Automatic	Protection is preferably built-in, the default option, or automated. Credit card PINs are automated, but mobile phone PIN code locks are rarely used. Lack of automation allow offenders to take advantage of apathy or ignorance on the part of user-owners.
Necessary	It is necessary to be the owner, or to possess information or knowledge held by the owner, to use a product. This includes mechanical keys, user codes, and biometric information.
Detectable	Make it obvious that the product is being stolen or has been stolen. The tamper-proof design of some products tags clearly reveal when they have been removed to facilitate shop theft. Exploding ink-dye in money bags means money from bank robberies is easily detected, to the extent that the cash is effectively worthless.
Secure	Product protection should not be easily removable or hackable. The security itself should be securely designed to pre-empt tactical displacement.

Appendix B

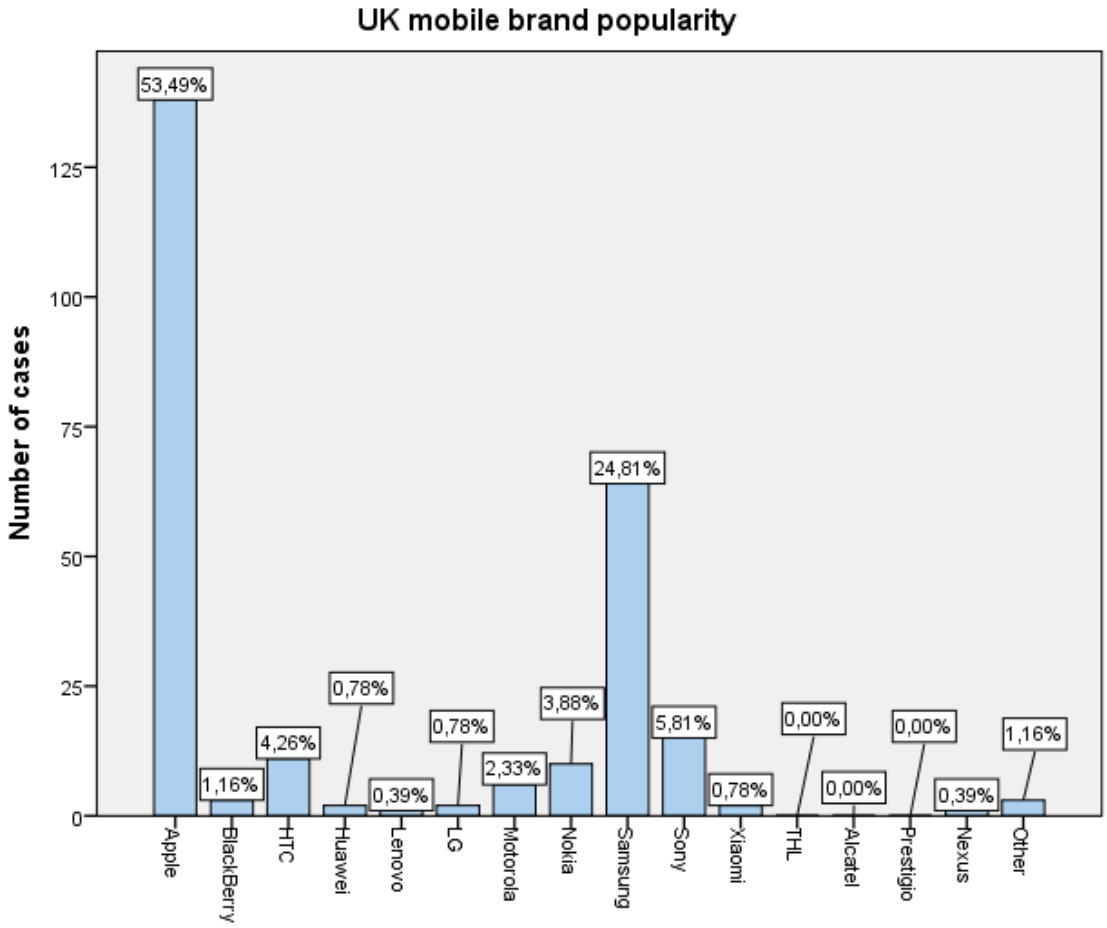

Figure 2 Popularity of mobile brands among Generation Y - UK

Appendix C

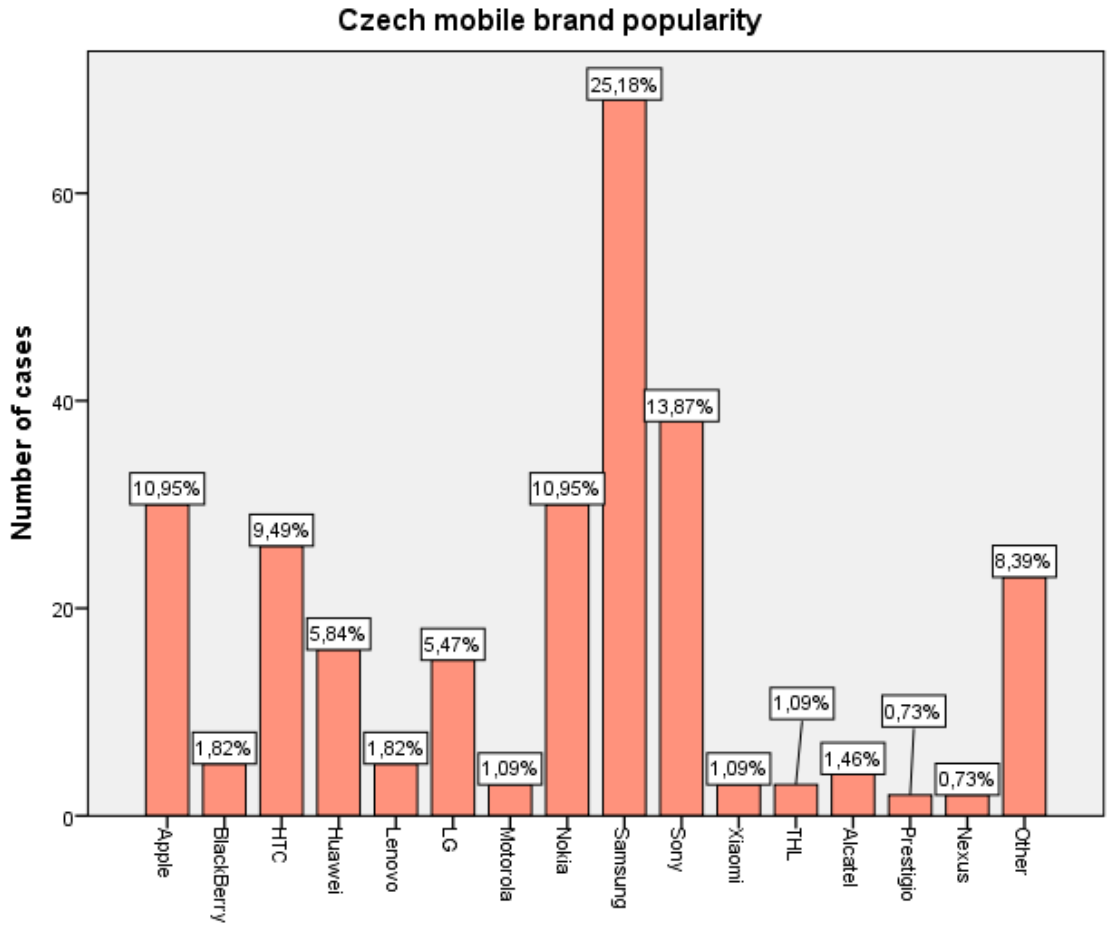

Figure 3 Popularity of mobile brands among Generation Y – CZ

Appendix D

1. **Do you own a smartphone?**
    a. Yes, I own at least one
    b. No, I do not (if you choose this option, please skip to question 10)

2. **What brand of smartphone do you own?**
    a. Apple
    b. BlackBerry
    c. HTC
    d. Huawei
    e. Lenovo
    f. LG
    g. Motorola
    h. Nokia
    i. Samsung
    j. Sony
    k. Xiaomi
    l. THL
    m. Alcatel
    n. Prestigio
    o. Nexus
    p. Other brand, please specify ……

3. **Have you ever lost your smartphone?**
    a. I have not lost my smartphone yet
    b. Once
    c. Twice
    d. Three times
    e. More than three times

4. **If you have ever lost your smartphone, what did help you to find it?**
    a. Software in the smartphone
    b. Information (contacts, photos etc.) in the smartphone, which helped the finder to contact me
    c. Somebody found my smartphone and put it on a logical place so I could find it and collect here (information point, police station, visible place around etc.)
    d. I found my smartphone by myself on the same place where I had lost it
    e. I have never found my smartphone
    f. Other, please specify ……...

5. **What type of security solution do you protect your smartphone with?**
    a. I do not protect my smartphone
    b. Antivirus
    c. Lock screen and its security solutions
    d. Tracking software
    e. I am not sure
    f. Other type, please specify ……...

6. **Are you able to be *constantly* connected to the internet on your smartphone?**
    a. Yes, in a homeland as well as abroad (roaming)
    b. Yes, but only in a homeland
    c. No, only where Wi-Fi connection is available
    d. No, I do not have access to the internet on my smartphone at all
    e. I am not sure
    f. Other, please specify ……...

7. **Rate following statements. (1 – totally agree, 7 – totally disagree)**

Statement:	1	2	3	4	5	6	7
I consider data stored in my smartphone valuable.							
I consider data stored in my smartphone confidential.							
I consider my smartphone secured enough.							
I consider my smartphone secured enough against physical loss.							
If on the market existed some security solution, which would raise the chance to find my smartphone in case of its loss, I would be interested in it.							
I am willing to pay for security solution, which raises the chance to find my smartphone in case of its loss.							
I am willing to put essential identification information on the lock screen of my smartphone in order to raise a chance to find it in case of its loss.							

8. **If you are willing to pay for security solution, which raises the chance to find my smartphone in case of its loss, which type of payment do you consider as the most suitable for you?**
    a. Single payment
    b. Weekly
    c. Monthly
    d. Annually
    e. I am not willing to pay for this type of security solution
    f. I am not sure
    g. Other, please specify ……...

9. **Based on your answer from previous question, please write down the highest price, which you are willing to pay for this security solution: (if you are not willing to pay for this type of security solution, feel free to skip this question)**
    a. Price in £……

10. **If you found a smartphone, would you try to find original owner of this phone?**
    a. No, I would always keep found smartphone for myself
    b. No, I would always ignore found smartphone, I would keep it on the place where I saw it
    c. Yes, but only if found smartphone would be unattractive enough for me
    d. Yes, but only if I could easily find out who is the owner of found smartphone
    e. Yes, I would make a great effort to find out who is the owner of found smartphone
    f. Yes, but I would not require a reward unless I had to make an great effort to find the owner
    g. Yes, but I would return found smartphone only if I could receive adequate reward for it
    h. I am not sure
    i. Other, please specify ……

11. **I consider my financial security based on my own income and/or financial support from my family respectively (if there is any) as:**
    a. I feel I am not financially secured enough
    b. I feel I am financially secured, but without an opportunity to buy luxuries
    c. I feel I am financially secured with opportunity to rarely buy some luxuries
    d. I feel I am financially secured with opportunity to more often buy some luxuries
    e. I feel I am perfectly financially secured with opportunity to buy anything what I want without worries about money
    f. I am not sure
    g. Other, please specify ……...

12. **Are you:**
    a. Male
    b. Female

13. What is your age group?

c. Under 18
d. 18-35
e. Over 35

14. Your country of residence is:

a. United Kingdom
b. Other, please state ……...

15. Your qualifications are:

a. Primary education
b. Secondary education (GCSE)
c. Secondary education (A-Level)
d. University degree
e. Other, please specify ……...

16. What is your labour market status?

a. Student
b. Full Time Employment
c. Part time Employment
d. Unemployed
e. Self-employed
f. Other, please specify ……...

Appendix E

1. **Vlastníte chytrý telefon?**
    a. Ano, vlastním
    b. Ne, nevlastním (pokud zvolíte tuto možnost, pokračujte otázkou č. 10)

2. **Jakou značku chytrého telefonu vlastníte?**
    a. Apple
    b. BlackBerry
    c. HTC
    d. Huawei
    e. Lenovo
    f. LG
    g. Motorola
    h. Nokia
    i. Samsung
    j. Sony
    k. Xiaomi
    l. THL
    m. Alcatel
    n. Prestigio
    o. Nexus
    p. Jinou značku, prosím uveďte ……

3. **Stalo se Vám někdy, že jste ztratili chytrý telefon?**
    a. Ještě jsem chytrý telefon neztratil
    b. Jednou
    c. Dvakrát
    d. Třikrát
    e. Více než třikrát

4. **V případě, že jste Váš chytrý telefon ztratili, co Vám pomohlo jej nalézt?**
    a. Software v chytrém telefonu
    b. Informace (fotky, kontakty apod.) v chytrém telefonu, podle kterých Vás nálezce kontaktoval
    c. Chytrý telefon byl někým nalezen a umístěn na místě, kde jsem jej mohl/a přirozeně najít a vyzvednout (informační centrum, policie, vrátnice apod.)
    d. Chytrý telefon jsem sám/sama nalezl/a na místě, kde jsem jej ztratil/a
    e. Chytrý telefon se mi nikdy nepodařilo nalézt
    f. Jiná možnost, prosím uveďte ……

5. **Jakým typem zabezpečení Váš chytrý telefon chráníte?**
    a. Žádné zabezpečení
    b. Antivirus
    c. Zamknutá obrazovka a její možnosti zabezpečení
    d. Software pro sledování polohy chytrého telefonu
    e. Nejsem si jistý/á
    f. Jiný typ, prosím uveďte …….....

6. **Máte možnost** *nepřetržitého* **připojení k internetu ve Vašem chytrém telefonu?**
    a. Ano, v domácí síti i v cizině (roaming)
    b. Ano, ale pouze v domácí síti
    c. Pouze tam, kde je přístup na Wi-Fi
    d. Nemám vůbec možnost připojit se na internet
    e. Nejsem si jistý/á
    f. Jiná možnost, prosím uveďte ……..

7. **Ohodnoťte následující tvrzení (1 – silně nesouhlasím, 7 – silně souhlasím)**

Tvrzení:	1	2	3	4	5	6	7
Považuji data uložená ve svém chytrém telefonu za důležitá.							
Považuji data uložená ve svém chytrém telefonu za důvěrná.							
Myslím si, že můj chytrý telefon je dostatečně zabezpečen.							
Myslím si, že můj chytrý telefon je dostatečně zabezpečen proti fyzické ztrátě.							
Kdyby na trhu bylo řešení, které zvýší šanci na nalezení mého chytrého telefonu v případě jeho ztráty, měl/a bych o něj zájem.							
Jsem ochoten/na zaplatit za řešení, které zvýší šanci na nalezení mého chytrého telefonu v případě jeho ztráty.							
Jsem ochoten/na v rámci zvýšení šance na nalezení mého chytrého telefonu v případě jeho ztráty umístit nezbytné identifikační informace na zamykací obrazovku tohoto chytrého telefonu.							

8. **Pokud byste byli ochotni zaplatit za řešení, které zvýší šanci na nalezení Vašeho chytrého telefonu v případě jeho ztráty, jak by Vám nejvíce vyhovovalo za toto řešení (za)platit?**
    a. Jednorázová platba
    b. Týdenní paušál
    c. Měsíční paušál
    d. Roční paušál
    e. Nebyl/a bych ochoten/na za toto řešení (za)platit
    f. Nejsem si jistý/á
    g. Jiná možnost, prosím uveďte ……

9. **Na základě Vaši odpovědi z předchozí otázky uveďte, jakou nejvyšší částku byste byli ochotní (za)platit: (pokud nejste ochotní za takovéto bezpečnostní řešení cokoliv zaplatit, tuto otázku přeskočte)**
    a. Částka v Kč……

10. **V případě, že naleznete chytrý telefon, měli byste snahu nalézt jeho majitele?**
    j. Ne, nalezený chytrý telefon bych si vždy nechal/a
    k. Ne, nalezený chytrý telefon bych vždy ignoroval, nechal bych jej na místě, kde bych jej zahlédl
    l. Ano, ale pouze pokud by mi nalezený chytrý telefon nepřipadal atraktivní
    m. Ano, ale pouze pokud by bylo možné jednoduše zjistit majitele
    n. Ano, vyvinul/a bych velkou snahu nalézt majitele
    o. Ano, ale vrátil/a bych jej pouze, pokud je za nalezený chytrý telefon slíbena adekvátní odměna
    p. Ano, ale pokud bych musel/a vyvinout velkou snahu nalézt majitele, vrátil/a bych jej pouze, pokud je za nalezený chytrý telefon slíbena adekvátní odměna
    q. Nejsem si jistý/á
    r. Jiná možnost, prosím uveďte ……

11. Finanční zajištění ze strany Vaší rodiny, popřípadě z Vašich osobních či jiných příjmů, vnímáte jako:

a. Jsem nedostatečně finančně zajištěn/á
b. Jsem finančně zajištěn/á, ale bez možnosti pořídit si luxusní zboží
c. Jsem dostatečně finančně zajištěn/á s možností si výjimečně pořídit luxusní zboží
d. Jsem dostatečně finančně zajištěn/á s možností si častěji pořizovat luxusní zboží
e. Jsem nadstandardně finančně zajištěn/á a mohu si kdykoli a bezstarostně pořizovat luxusní věci
f. Nejsem si jistý/á
g. Jiná možnost, prosím uveďte ……

12. Jste:

f. Muž
g. Žena

13. Do které věkové skupiny patříte?

h. Mladší 18 let
i. 18-35 let
j. Starší 35 let

14. Pocházíte z:

a. České Republiky
b. Jiné, prosím uveďte
……

15. Vaše nejvyšší dosažené vzdělání:

a. Základní
b. Vyučen
c. Středoškolské
d. Vysokoškolské

16. Váš sociální status je:

k. Student
l. Zaměstnaný plně
m. Zaměstnaný částečně
n. Podnikatel
o. Nezaměstnaný
p. Jiné, prosím uveďte ……